V1774

REPORT NUMBER: CAL-93-N06

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

CHRYSLER CORPORATION
1993 DODGE DYNASTY
4-DOOR SEDAN

NHTSA NUMBER: MP0301

CALSPAN TEST NUMBER: 8058-2

OCTOBER 27, 1992

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FINAL REPORT

PREPARED FOR:

U. S. Department of Transportation
National Highway Traffic Safety Administration
Office of Market Incentives
400 Seventh Street, S.W.
Room No. 5313 (NRM-20)
Washington, DC 20590

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16. Abstract

A frontal load cell barrier test of a 1993 Dodge Dynasty 4-Door Sedan was performed at Calspan Advanced Technology Center crash test facility in Buffalo, New York, on October 27, 1992.

The impact velocity was 56.3 kph and the temperature at the barrier face was 11°C. The maximum post-test vehicle crush was 622 mm. The test vehicle was equipped with a 3-point continuous belt system at each of the front outboard seating positions. The vehicle also was equipped with a driver side airbag as a supplemental restraint device.

With regard to FMVSS 208 "Occupant Crash Protection", injury criteria, both the driver and passenger dummies appear to comply with the maximum head, chest and femur requirements.

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Section 1

PURPOSE AND TEST PROCEDURE

This 56.3 kph frontal barrier impact test is part of the Composite FY 92 Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-90-D-02121. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.3 kph requirements.

The 56.3 kph frontal barrier impact test was conducted in accordance with the Office of Market Incentives (OMI) Laboratory Indicant Test procedure.

Section 2

SUMMARY OF TEST NUMBER MP0301

A load cell barrier consisting of 36 load cells was impacted by a 1993 Dodge Dynasty 4-Door Sedan at a velocity of 56.3 kph. The test was performed at the Calspan Corporation Advanced Technology Center on October 27, 1992. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The frontal barrier impact event was documented by one real-time camera and 16 high-speed cameras. Camera locations and other pertinent camera information can be found in this report.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with head and chest triaxial accelerometers and right/left femur load cells. Seat belt load cells were also on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. The driver ATD (Serial No. 245) was used in a previous test (MP5100). Injury criteria valves for this ATD were not exceeded in that test. The right-front passenger ATD (Serial No. 150) was calibrated prior to this test. Certification details, along with instrumentation calibration data, are found in Appendix C and D.

The 83 channels of data were recorded on a P.C. based data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces. Vehicle accelerometer #5(X), located on the right disc brake caliper, sustained a cut data cable at approximately 74 milliseconds. The velocity and displacement data curves for this accelerometer were removed from this report. Position 2 belt elongation potentiometer did not record accurately during test. Position 1 Upper Neck F(z) contained questionable data after approximately 63 milliseconds.

The driver's head struck the airbag; the HIC was 673.7. The maximum chest deceleration over 3 milliseconds was 48.4 g's and maximum chest deflection was 37

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Vehicle Year/Make/Model/Body Style: 1993 Dodge Dynasty 4-Door Sedan

NHTSA Test No.: MP0301 VIN.: 1B3XC46R8PD110947

Body Color: Green Date of Manufacture: 8/92

Engine: 6 Cylinders; - C.I.D.; 3.3 Liters; - CC

✓ Gas; - Diesel; - Turbocharged

- Longitudinal; - Transverse

Transmission: 4 Speed; - Manual; X Automatic; X Overdrive

Final Drive: - Front Wheel; - Rear Wheel; - Four Wheel

Date Received: 9/22/92 Odometer Reading: 34 km

✓ A/C; ✓ P/S; ✓ P/B; __ P/wdo;

✓ Tilt Wheel - P/seats; ✓ Cruise Control

Type of Occupant Restraint: 3-Point Continuous Belt System with a Supplemental Driver Side Airbag

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): Front 220 kPa, Rear 220 kPa

Recommended Tire Size: P19575R14

Recommended Cold Tire Pressure: Front 200 kPa, Rear 220 kPa

Tires on Vehicle: P19575R14 ; Manufacturer: Goodyear

Number of Occupants: 3 Front; 3 Rear; - 3rd Seat; 6 TOTAL

Type of Front Seats: - Bucket; - Bench; ✓ Split Bench

Type of Front Seat Back: - Fixed; ✓ Adj. With ✓ Lever ✓ Rot. Knob

Vehicle Capacity Weight (VCW) = 499 kgs (A)

No. of Occupants x 68 kgs = 408 kgs (B)

Rated Cargo and Luggage Weight (RCLW) A-B = 91 kgs

GVWR 1979 kgs GAWR: Front 1090 kgs Rear 911 kgs

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (WITH MAXIMUM FLUIDS) = UDW:

Right Front = 445 kgs Right Rear = 263 kgs

Left Front = 481 kgs Left Rear = 245 kgs

TOTAL FRONT WEIGHT = 926 kgs (64.6% of Total Vehicle Weight)

TOTAL REAR WEIGHT = 508 kgs (35.4% of Total Vehicle Weight)

TOTAL DELIVERED WEIGHT = 1434 kgs

CALCULATION FOR TARGET TEST WEIGHT:

UDW = Unloaded Delivered Weight (1434 kgs)

VCW = Vehicle Capacity Weight (499 kgs)

DSC = Designated Seating Capacity (6)

RCLW = VCW - 68 (DSC) = 91 kgs

Target Test Weight = UDW + RCLW + (2 dummies x 76 kgs/dummy)

Target Test Weight = 1677 kgs

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 88 KILOGRAMS CARGO:

Right Front = 490 kgs Right Rear = 354 kgs

Left Front = 494 kgs Left Rear = 336 kgs

TOTAL FRONT WEIGHT = 984 kgs (58.8% of Total Vehicle Weight)

TOTAL REAR WEIGHT = 690 kgs (41.2% of Total Vehicle Weight)

TOTAL TEST WEIGHT = 1674 kgs

Weight of ballast secured in vehicle trunk area = 0 kgs

VEHICLE ATTITUDE (all dimensions in millimeters):

Delivered Attitude: RF 709 LF 704 RR 714 LR 716

Test Attitude: RF 695 LF 695 RR 655 LR 657

Wheel Base: 2655 mm.; C.G. = 1094 mm. rearward of front wheel C/L

Remarks: 56.4 liters of stoddard solution was placed in fuel tank

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

POST-IMPACT DATA:

Type of Test: Frontal Barrier Impact Angle: 0°

Date of Test: October 27, 1992 Time of Test: 11:55

Ambient Temperature: 11 °C at impact area

Temperature in Occupant Compartment: 21 °C

Windshield Molding Temperature: 21 °C

Required Impact Velocity Range: 55.5 to 57.1 kph

Impact Velocity: primary = 56.3 kph, secondary = 56.3 kph

Distance From Front Bumper to Barrier Face When

Entering Speed Trap: 1321 mm

Exiting Speed Trap: 305 mm

VEHICLE REBOUND AND CRUSH:

Vehicle Length:	Pre-test	= R 4755 mm	C_L 4839 mm	L 4750 mm
	Post-test	= R 4160 mm	C_L 4217 mm	L 4109 mm
	Crush	= R 595 mm	C_L 622 mm	L 641 mm

Distance from front of test vehicle to point of impact:

R 90 mm C_L 0 mm L 60 mm

VISIBLE DUMMY CONTACT POINTS:

	Driver	Passenger
Head	Airbag	Upper dash panel
Chest	Airbag	No contact
Abdomen	No contact	No contact
Left Knee	Lower dash panel	Glove box door
Right Knee	Lower dash panel	Glove box door

Table 1

GENERAL TEST AND VEHICLE PARAMETER DATA (cont'd)

	Front		Rear	
	Left	Right	Left	Right
Door Opening	Operable	Closed-Operable	Operable	Closed-Operable

	Front		Rear	
Seat Movement	Left	Right	Left	Right
Seat Back Failure	None	None	N/A	N/A
Seat Shift (mm)	50 mm Forward	90 mm Rearward	N/A	N/A

Glazing Damage

Backlight/Windshield: Windshield sustained stress fractures but remained intact

Other Notable Impact Effects: None

Section 3

OMI FINAL DATA

Occupant and Vehicle Information

I. OMI DATA

1. Dummy Injury Criteria Data Summary
2. Dummy Positioning Data
3. Seat Belt Performance Assessment Data
4. Camera Locations
5. Vehicle Target Locations

II. OVR DATA

1. Load Cell Barrier Data
2. Vehicle Accelerometer Data
3. Test Vehicle Measurements

Table 2

DUMMY INJURY CRITERIA VALUES

NHTSA No.: MP0301 Vehicle: 1993 Dodge Dynasty 4-Door Sedan

	MAXIMUM HEAD ACCELERATION (g's)			
	X	Y	Z	R
Position #1 - Driver	-100.5	-44.1	-126.1	165.7
Position #2 - Passenger	-101.3	22.3	36.1	105.9

	MAXIMUM CHEST ACCELERATION (g's)			
	X	Y	Z	R
Position #1 - Driver	-50.2	-7.6	-32.6	48.4
Position #2 - Passenger	-40.7	8.1	12.4	40.8

The maximum chest resultant acceleration is defined as the maximum acceleration which exceeds 0.003 seconds in duration.

	MAXIMUM FORCE - FEMUR LOAD (nwt)	
	LEFT FEMUR	RIGHT FEMUR
Position #1 - Driver	-4157.4	-5585.5
Position #2 - Passenger	-4118.3	-2708.3

	MAXIMUM FORCE - SEAT BELT LOADS (nwt)		
	SHOULDER STRAP UPPER BELT LOAD	LAP STRAP RIGHT BELT LOAD	LAP STRAP LEFT BELT LOAD
Position #1 - Driver	6376.0	-	4897.5
Position #2 - Passenger	8034.1	7888.9	-

	HEAD INJURY CRITERIA (HIC)			
	HIC	t_1 (SEC)	t_2 (SEC)	Average Acceleration t_1 TO t_2
Position #1 - Driver	673.7	.05484	.09072	51.2
Position #2 - Passenger	929.1	.09168	.10440	88.2

HIC is as defined in FMVSS 208. The maximum time interval from t_1 to t_2 is 36 milliseconds.

Table 3

HYBRID III NECK AND CHEST DATA SHEET

Vehicle Year/Make/Model/Body Style: 1993 Dodge Dynasty 4-Door Sedan

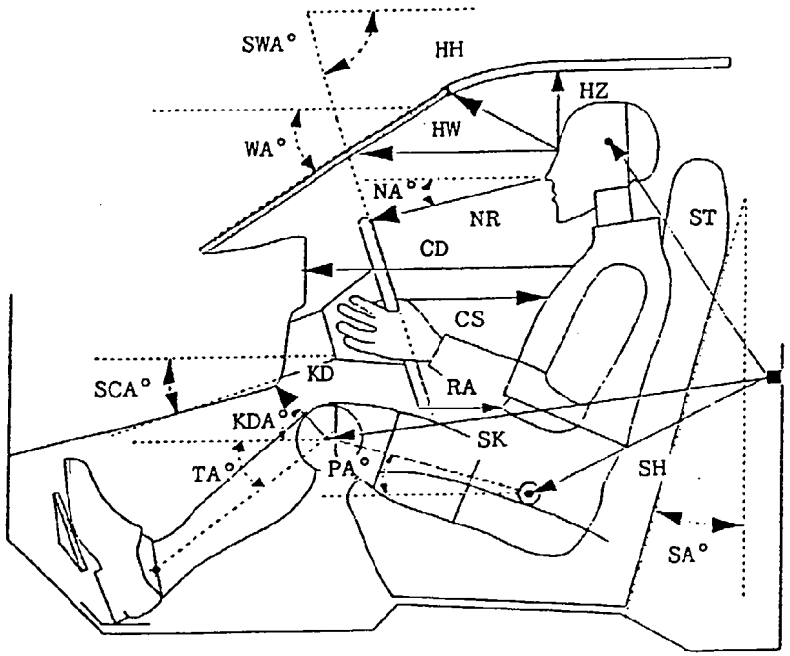
Vehicle NHTSA No.: MP0301 Test Date: October 27, 1992

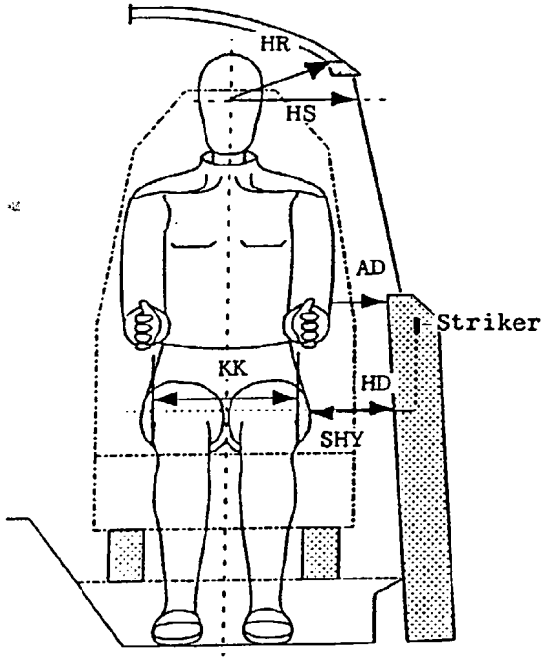
MAXIMUM VALUES	DRIVER DUMMY ID # 245	PASSENGER DUMMY ID # 150
Neck Load X (nwt)	-876.5	952.8
Neck Load Y (nwt)	307.5	216.8
Neck Load Z (nwt)	6554.0	1495.8
Neck Moment X (nwt-m)	39.9	-52.7
Neck Moment Y (nwt-m)	63.8	35.5
Neck Moment Z (nwt-m)	-13.7	9.0
Chest Deflection X (mm)	37	36
Time of Max. Occurrence (msec)	80.0	82.7

NOTE: All values listed must be occurring during primary impact event.

Figure 1

DUMMY MEASUREMENTS FOR FRONT SEAT PASSENGERS



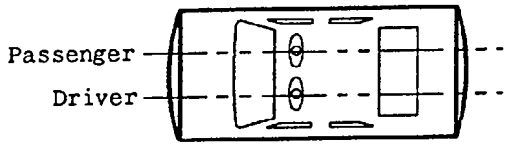


HH – Head to Header
HW – Head to Windshield
HZ – Head to Roof
NR – Nose to Rim
CS – Steering Wheel to Chest
CD – Chest to Dash
RA – Rime to Abdomen
KDL/KDR – Knee to Dash
KDA – Knee to Dash Angle
SH – Striker to H-Point

SK – Striker to Knee
ST – Striker to Head
NA – Nose to Rim Angle
TA – Tibial Angle
PA – Pelvic Angle
SA – Seat Back Angle
SCA – Steering Column Angle
SWA – Steering Wheel Angle.
WA – Windshield Angle

HR – Head to Side Header
HS – Head to Side Window
AD – Arm to Door
HD – H-Point to Door
SHY – Striker to H-Point (Y Dir.)
KK – Knee to Knee

Vertical Longitudinal Planes



Vertical Transverse Plane

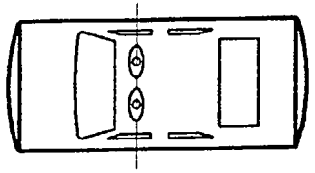


Table 4

FRONT SEAT OCCUPANT MEASUREMENTS

	DRIVER (Serial #245)	PASS (Serial #150)
WA°	30°	30°
SWA°	64°	N/A
SCA°	26°	N/A
SA°	Seat was set according to manufacturer specifications	Same as driver
HZ	173 mm	176 mm
HH	298 mm	314 mm
HW	475 mm	473 mm
HR	272 mm	263 mm
NR	323 mm Angle 15°	N/A
CD	460 mm	458 mm
CS	210 mm	N/A
RA	132 mm	N/A
KDL	132 mm Angle (KDA) 45°	120 mm
KDR	125 mm	125 mm Angle (KDA) 26°
PA°	22°	24°
TA°	40°	40°
KK	265 mm	245 mm
ST*	538 mm Angle 15°	533 mm Angle 14°
SK*	617 mm Angle 95°	617 mm Angle 93°
SH*	244 mm Angle 125°	251 mm Angle 120°
SHY	260 mm	262 mm
HS	272 mm	273 mm
HD	192 mm	195 mm
AD	152 mm	155 mm

*The angle for these measurements were recorded with respect to the vertical plane.

Table 5

SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:	Driver	Passenger
Belt length from trim panel exit to bolt hole anchor point for continuous webbing systems.	2164 mm	2134 mm
Shoulder belt length as measured on Part 572 Dummy.	876 mm	864 mm
Lap belt length as measured on Part 572 Dummy.	787 mm	787 mm
SHOULDER BELT SPOOL-OFF DATA:		
As determined by film analysis.	76 mm	38 mm
As determined mechanically.	76 mm	N/A
As determined electronically.	73 mm	91 mm
BELT STRETCH DATA:		
Measured electronically between shoulder belt load cell and the "D" ring.	63 mm/m	N/A mm/m
Measured mechanically	0 mm/m	50 mm/m

Figure 2

CAMERA POSITIONS FOR FRONTAL IMPACTS

NOTE: Camera Information Shown on Table 4

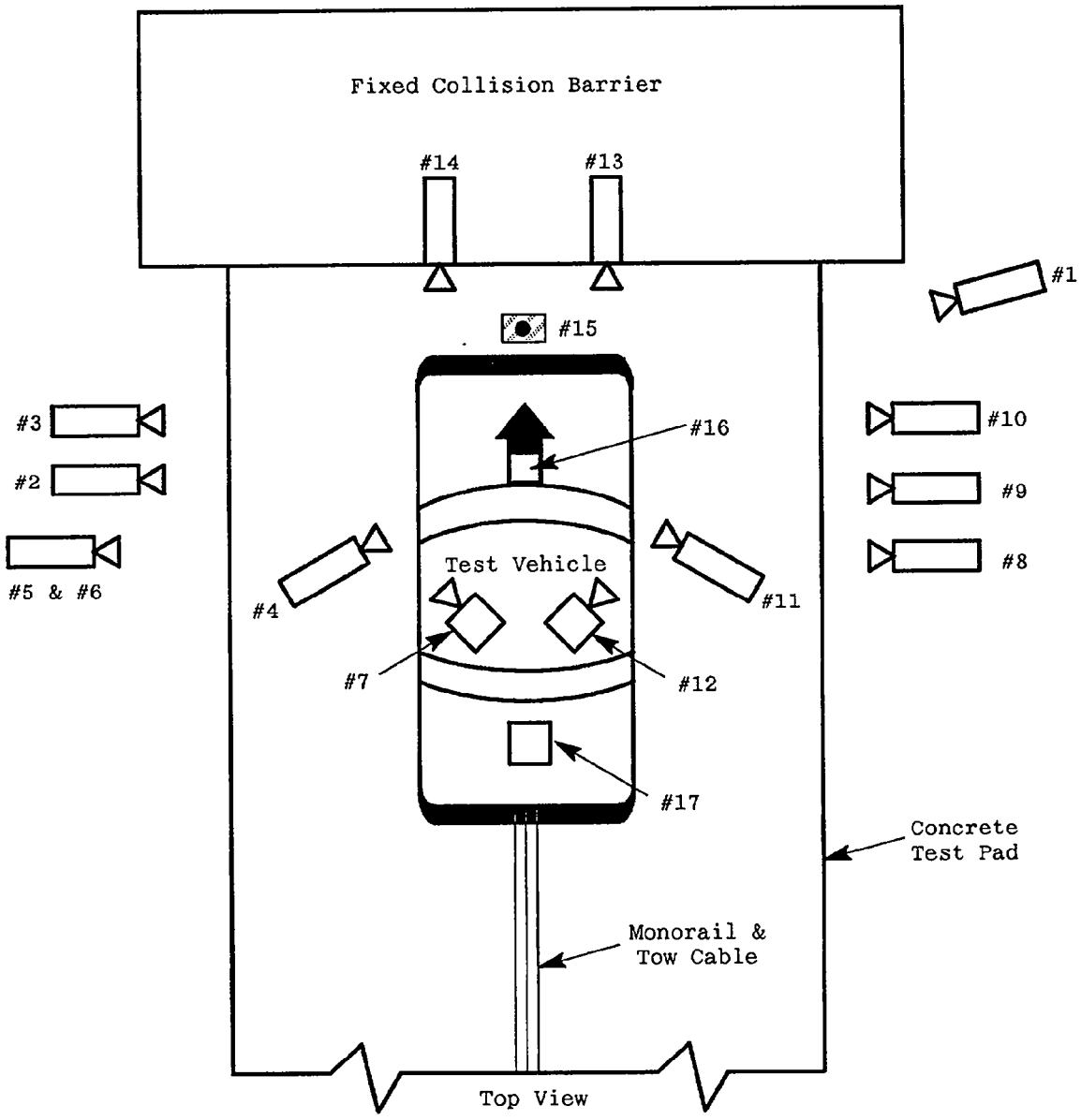


Table 6

HIGH-SPEED CAMERA LOCATIONS

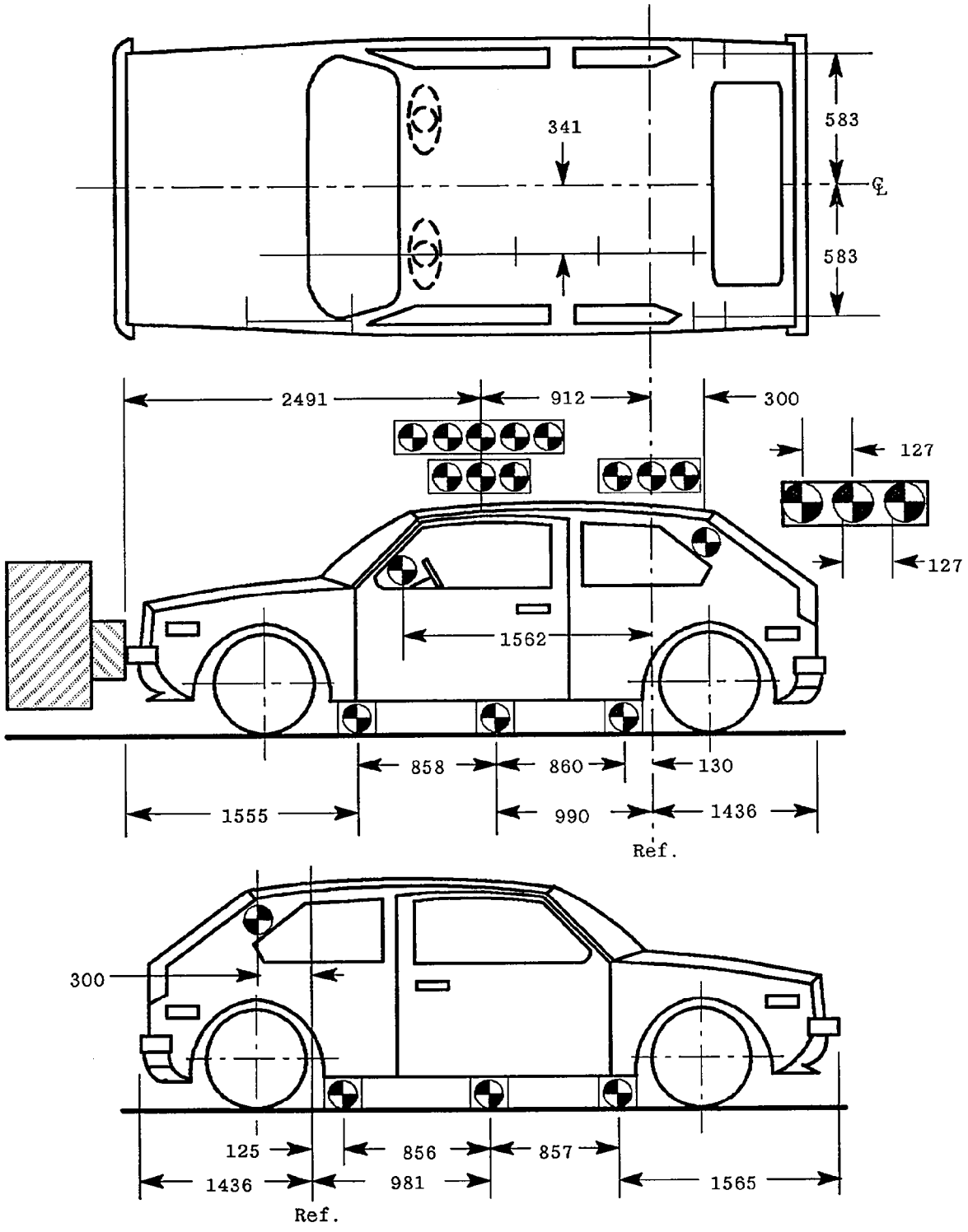
Test No. MP0301 Vehicle: 1993 Dodge Dynasty 4-Door Sedan

CAMERA NO.	VIEW	CAMERA POSITIONS (mm)* X	Y	Z	ANGLE** (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
1	Real-Time Camera	-	-	-	-	-	-	24
2	Overall Left Side	6426	1879	1067	-4	6009	13	550
3	Left Side View	8458	1041	1092	-3	8041	25	620
4	Driver and Interior View	2997	2769	1626	-15	2580	13	570
5	Steering Column (Bottom)	7366	2209	1168	-4	6949	13	590
6	Steering Column (Top)	7366	2209	1778	-8	6949	13	580
7	Left Belt	-	-	-	-	-	8	N/A
8	Overall Right Side	6197	1854	1067	-4	5780	13	600
9	Right Side View	8153	1270	1041	-4	7736	25	530
10	Right Passenger View	8433	1880	1473	-5	8016	35	440
11	Passenger and Interior View	2794	2718	1600	-16°	2377	25	570
12	Right Belt	-	-	-	-	-	8	650
13	Passenger Front View	610	-127	1778	-30°	-	13	630
14	Driver Front View	610	-127	1778	-30°	-	13	600
15	Windshield View	0	0	3048	-48°	-	13	600
16	Pit View of Engine	0	1100	-3048	90°	-	13	750
17	Pit View of Fuel Tank	0	2896	-3048	90°	-	13	910

*X = film plane to monorail centerline
Y = film plane to impact location
Z = film plan to ground
** = referenced to horizontal plane

Figure 3

VEHICLE TARGET LOCATIONS

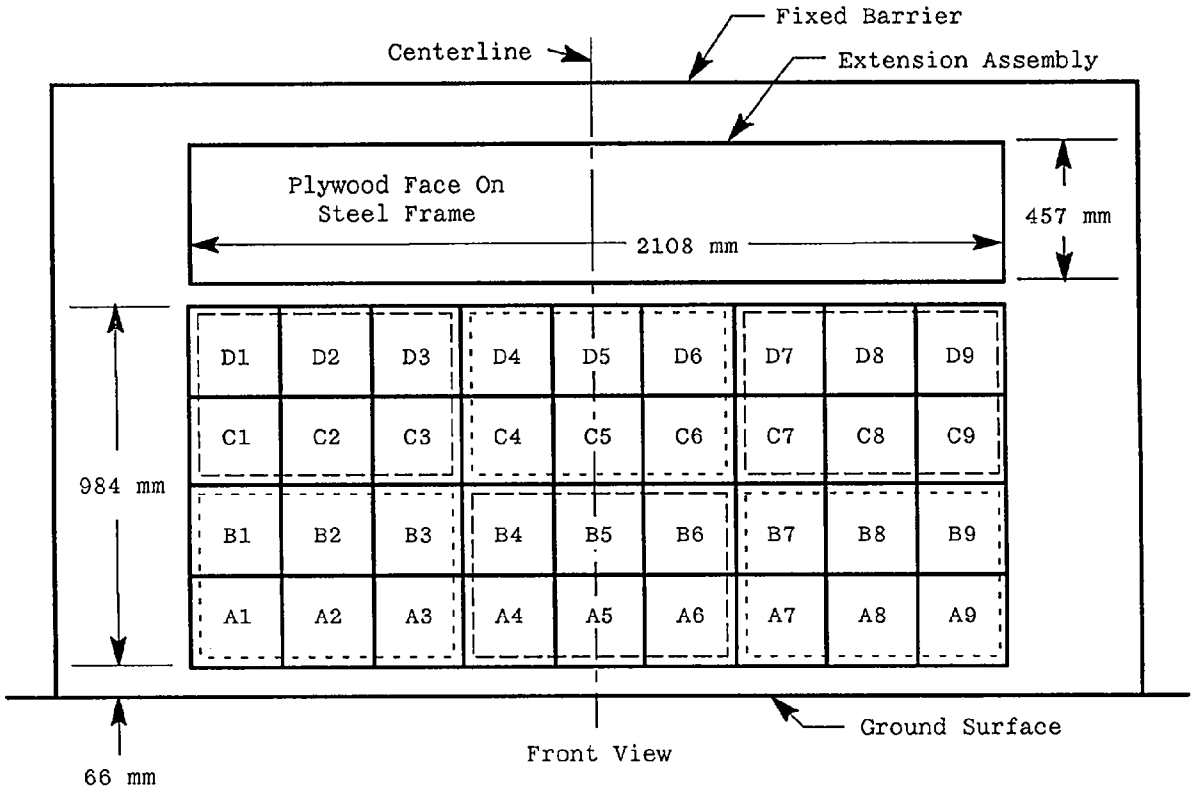


(Dimensions in millimeters)

Figure 4

LOAD CELL LOCATIONS ON FIXED BARRIER

36 Load Cells
4 Rows
9 Columns
6 Groupings (6 cells/group)



6 GROUPS OF 6 LOAD CELLS EACH

Group 4 C1 thru D3	Group 5 C4 thru D6	Group 6 C7 thru D9
Group 1 A1 thru B3	Group 2 A4 thru B6	Group 3 A7 thru B9

The following data is presented in Appendix B:

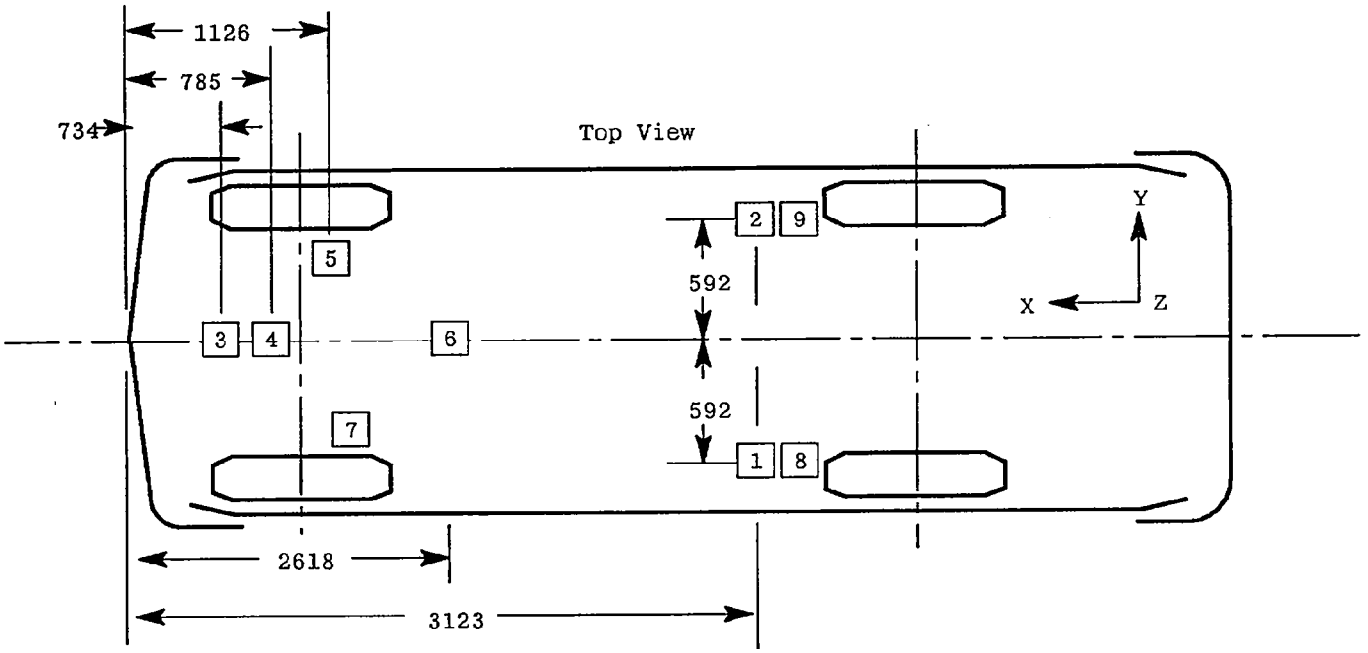
(1) Data from 36 individual load cells

(2) Total or Sum of 36 individual load cells

(3) Data from 6 Groupings shown above (6 cells/group)

Figure 5

VEHICLE ACCELEROMETER LOCATIONS



All dimensions are in millimeters

ACCELEROMETER NUMBER*	ACCELEROMETER LOCATION	DIRECTION		
		X	Y	Z
1	Left Rear Seat Crossmember	✓		
2	Right Rear Seat Crossmember	✓		
3	Top of Engine	✓		
4	Bottom of Engine	✓		
5	Right Disc Brake Caliper	✓		
6	Left Disc Brake Caliper	✓		
7	Instrument Panel	✓		
8	Left Rear Seat Crossmember	✓		
9	Right Rear Seat Crossmember	✓		

*The accelerometer pack number can be correlated with the vehicle response data traces found in Appendix B.

Figure 6

TEST VEHICLE MEASUREMENTS

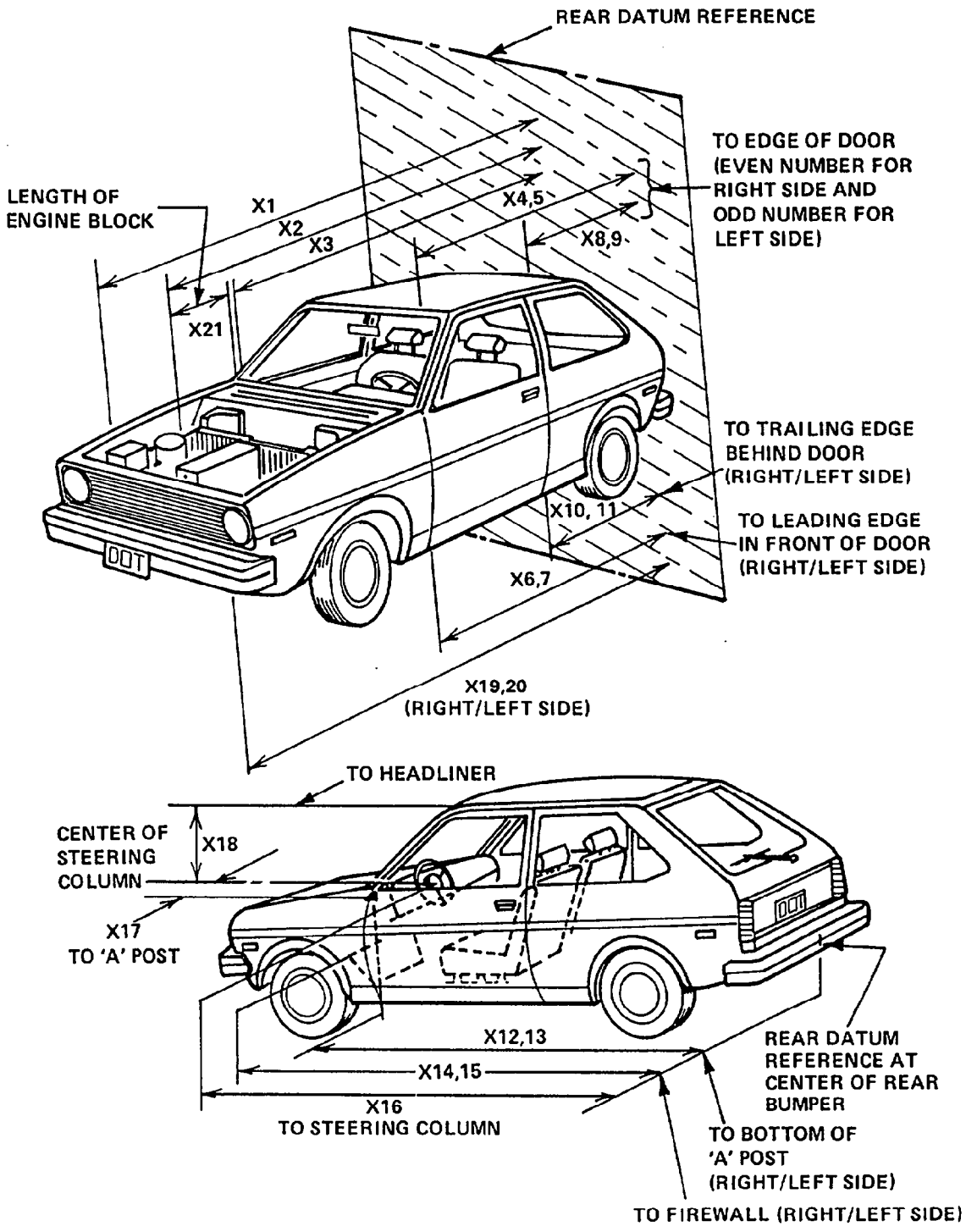


Table 7

VEHICLE MEASUREMENTS

No.		All Dimensions in Millimeters		
		Pre-Test	Post-Test	Differences
X1	Total Length of Vehicle at Centerline	4839	4217	622
X2	Rear Surface of Vehicle to Front of Engine	4140	3890	250
X3	Rear Surface of Vehicle to Firewall	3570	3450	120
X4	Rear Surface of Vehicle to Upper Leading Edge of Right Door	3225	3190	35
X5	Rear Surface of Vehicle to Upper Leading Edge of Left Door	3225	3235	-10
X6	Rear Surface of Vehicle to Lower Leading Edge of Right Door	3218	3166	52
X7	Rear Surface of Vehicle to Lower Leading Edge of Left Door	3215	3200	15
X8	Rear Surface of Vehicle to Upper Trailing Edge of Right Door	2208	2184	24
X9	Rear Surface of Vehicle to Upper Trailing Edge of Left Door	2205	2221	-16
X10	Rear Surface of Vehicle to Lower Trailing Edge of Right Door	2213	2169	44
X11	Rear Surface of Vehicle to Lower Trailing Edge of Left Door	2208	2200	8
X12	Rear Surface of Vehicle to Bottom of "A" Post of Right Side	3212	3160	52
X13	Rear Surface of Vehicle to Bottom of "A" Post of Left Side	3205	3190	15
X14	Rear Surface of Vehicle to Firewall, Right Side	3575	3449	126
X15	Rear Surface of Vehicle to Firewall, Left Side	3570	3506	64
X16	Rear Surface of Vehicle to Steering Column	2770	2750	20
X17	Center of Steering Column to "A" Post	400	385	15
X18	Center of Steering Column to Headliner	395	390	5
X19	Rear Surface of Vehicle to Right Side of Front Bumper	4755	4160	595
X20	Rear Surface of Vehicle to Left Side of Front Bumper	4750	4109	641
X21	Length of Engine Block	450	450	0
RD	Rear Surface of Vehicle to Right Side of Dash Panel	2990	2950	40
CD	Rear Surface of Vehicle to Center of Dash Panel	2985	2955	30
LD	Rear Surface of Vehicle to Left Side of Dash Panel	2965	2980	-15

ACCIDENT INVESTIGATION DIVISION DATA
FOR 35 MPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: 1993 Dodge Dynasty 4-Door Sedan

Vehicle NHTSA No.: MP0301; Vin: 1B3XC46R8PD110947

Model Year: 1993; Build Date: 8/92; Test Date: 8/27/92

Vehicle Size Category: Mid-Size; Test Weight: 1674 kgs

Vehicle Wheelbase: 2655 mm; Front Overhang: 1397 mm; Overall Width: 1750 mm

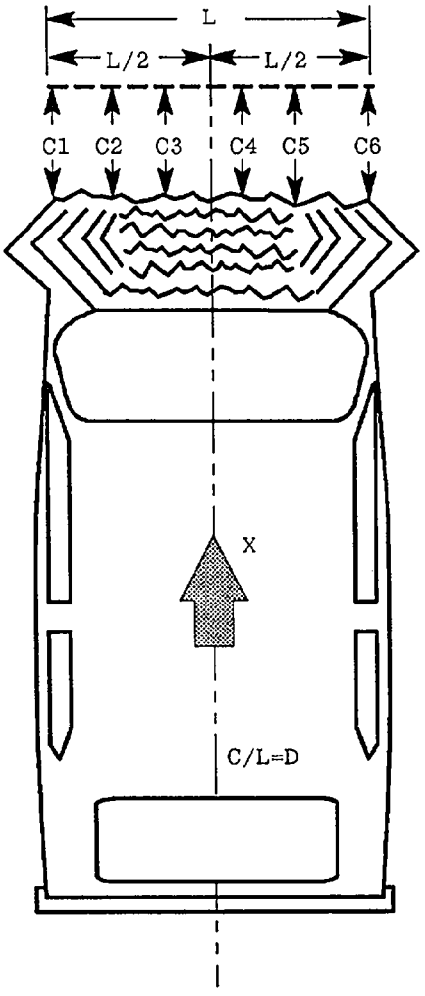
Collision Deformation Classification (CDC) Code: 12FDEW2

Crush Depth Dimensions:

C1= 585 mm
C2= 592 mm
C3= 605 mm
C4= 628 mm
C5= 646 mm
C6= 640 mm

Midpoint of Damage: D= Vehicle Centerline (Longitud.)

Length of Damaged Region: L= 1500 mm



Appendix A

PHOTOGRAPHS

PHOTOGRAPHS

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A-21	PRE-TEST DRIVER POSITION VIEW	A-23
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A-23	PRE-TEST PASSENGER POSITION VIEW	A-25
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A-25	PRE-TEST DRIVER AND INTERIOR VIEW	A-27
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A-27	PRE-TEST PASSENGER AND INTERIOR VIEW	A-29
A-28	POST-TEST PASSENGER AND INTERIOR VIEW	A-30
A-29	IMPACT VIEW	A-31

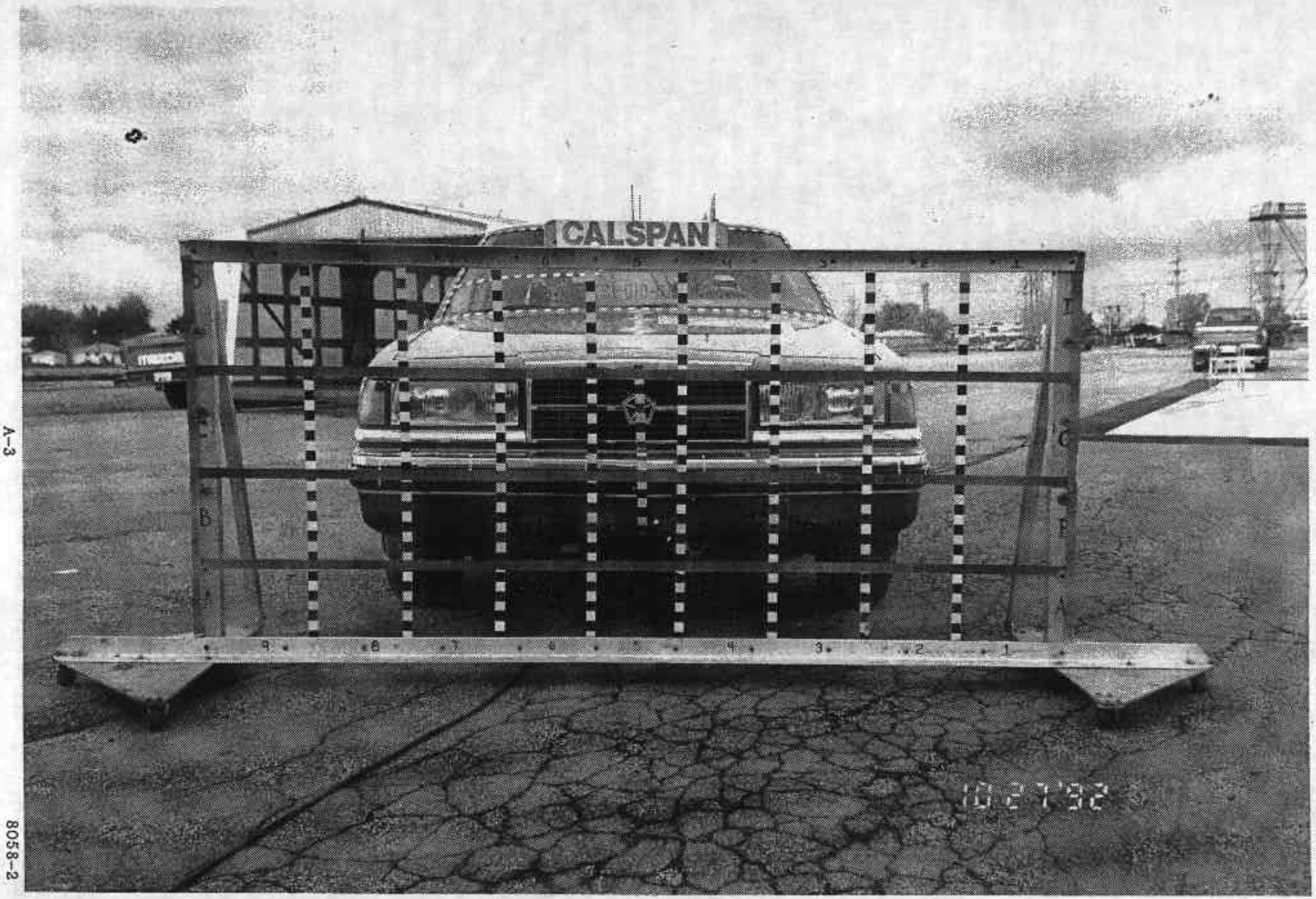


Figure A-1 LOAD CELL LOCATIONS

8058-2

Figure A-2 PRE-TEST FRONT VIEW

8058-2

Figure A-3 POST TEST FRONT VIEW

8058-2

Figure A-4 PRE-TEST LEFT SIDE VIEW

8058-2

Figure A-5 POST TEST LEFT SIDE VIEW

A-8

8058-2

Figure A-6 PRE-TEST RIGHT SIDE VIEW

A-9

8058-2

Figure A-7 POST-TEST RIGHT SIDE VIEW

Figure A-8 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

Figure A-9 POST-TEST RIGHT FRONT THREE-QUARTER VIEW

8058-2

Figure A-10 PRE-TEST LEFT REAR THREE-QUARTER VIEW

A-13

8058-2

Figure A-11 POST-TEST LEFT REAR THREE-QUARTER VIEW

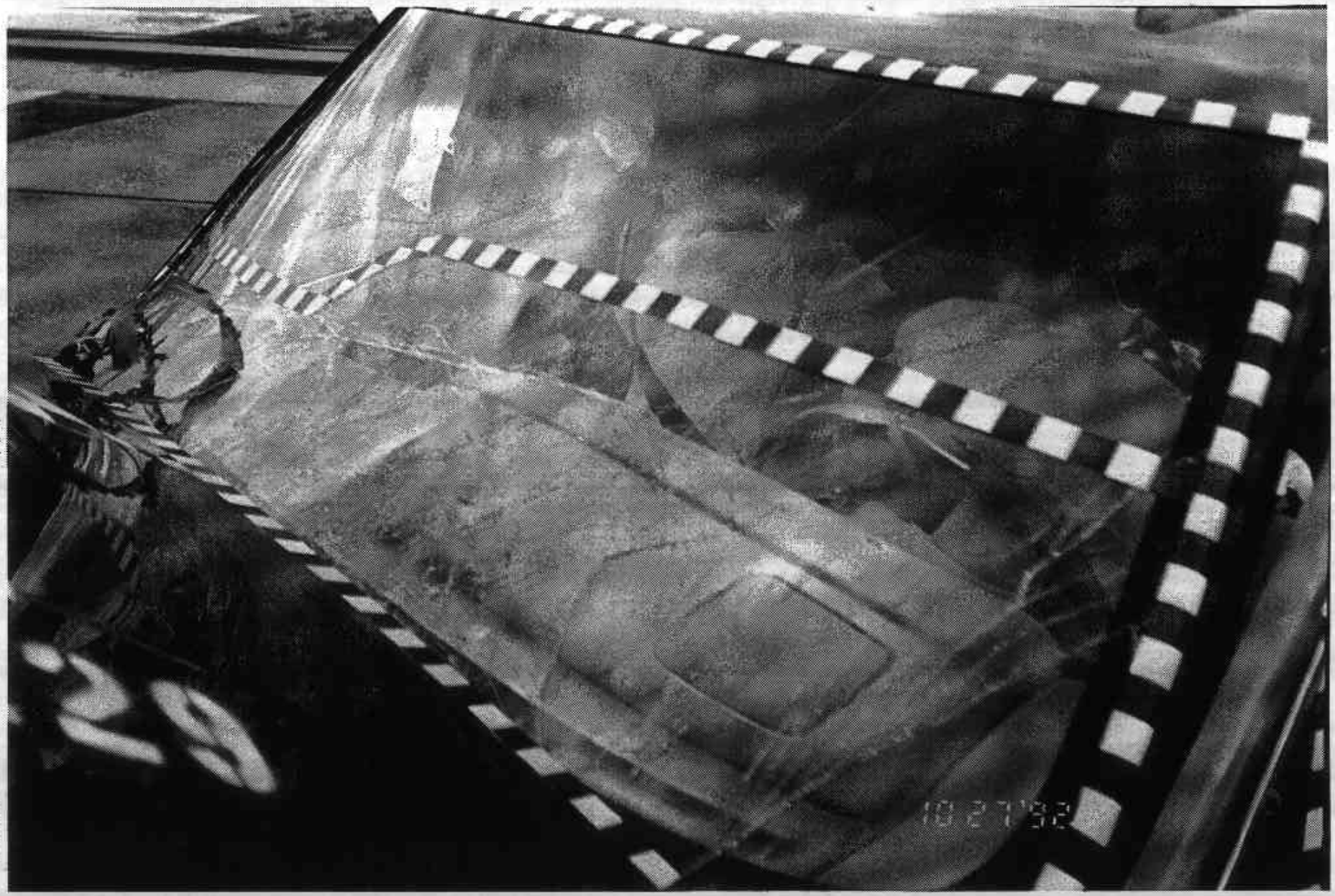


Figure A-12 POST-TEST WINDSHIELD VIEW

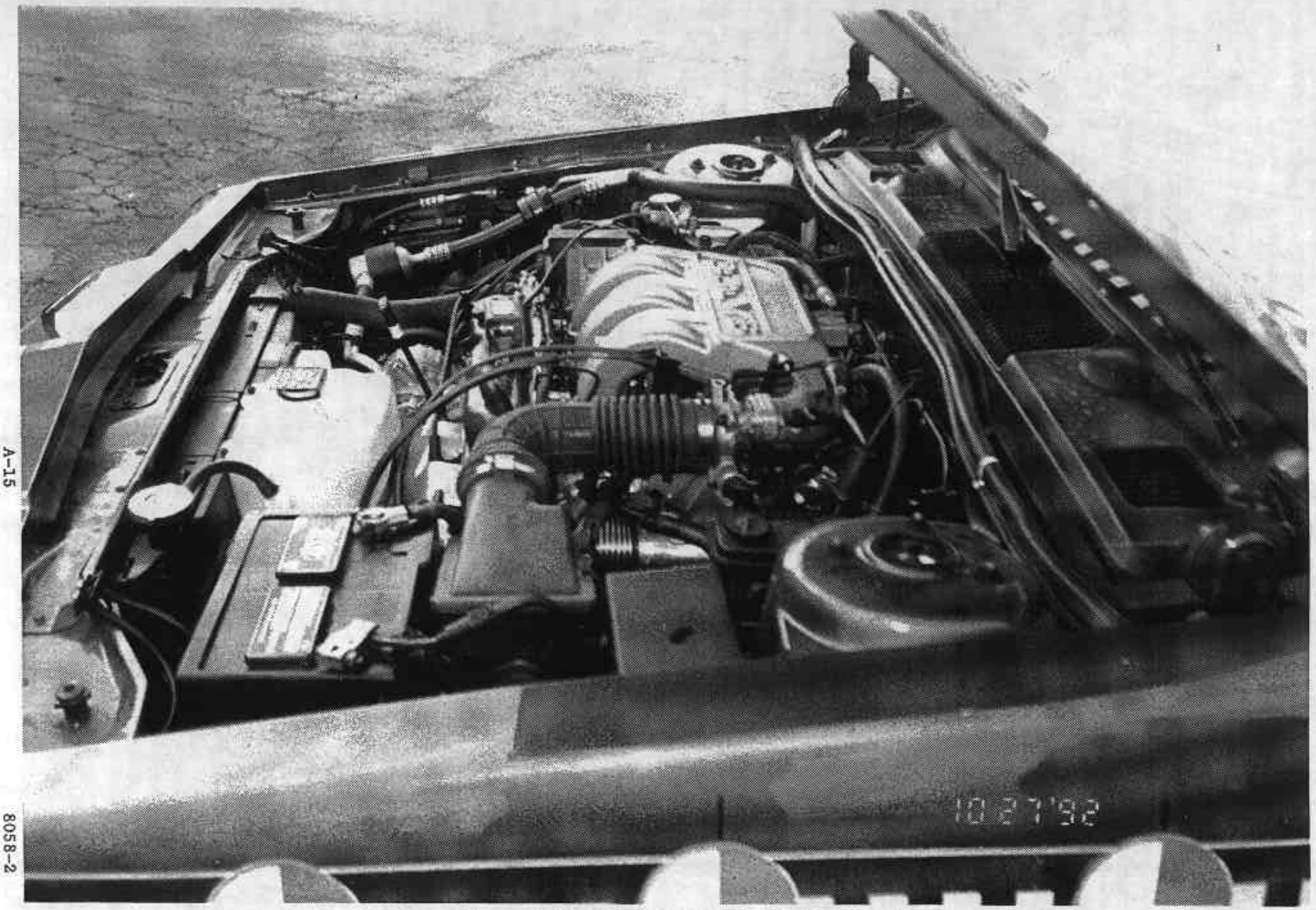


Figure A-13 PRE-TEST ENGINE COMPARTMENT VIEW

8058-2

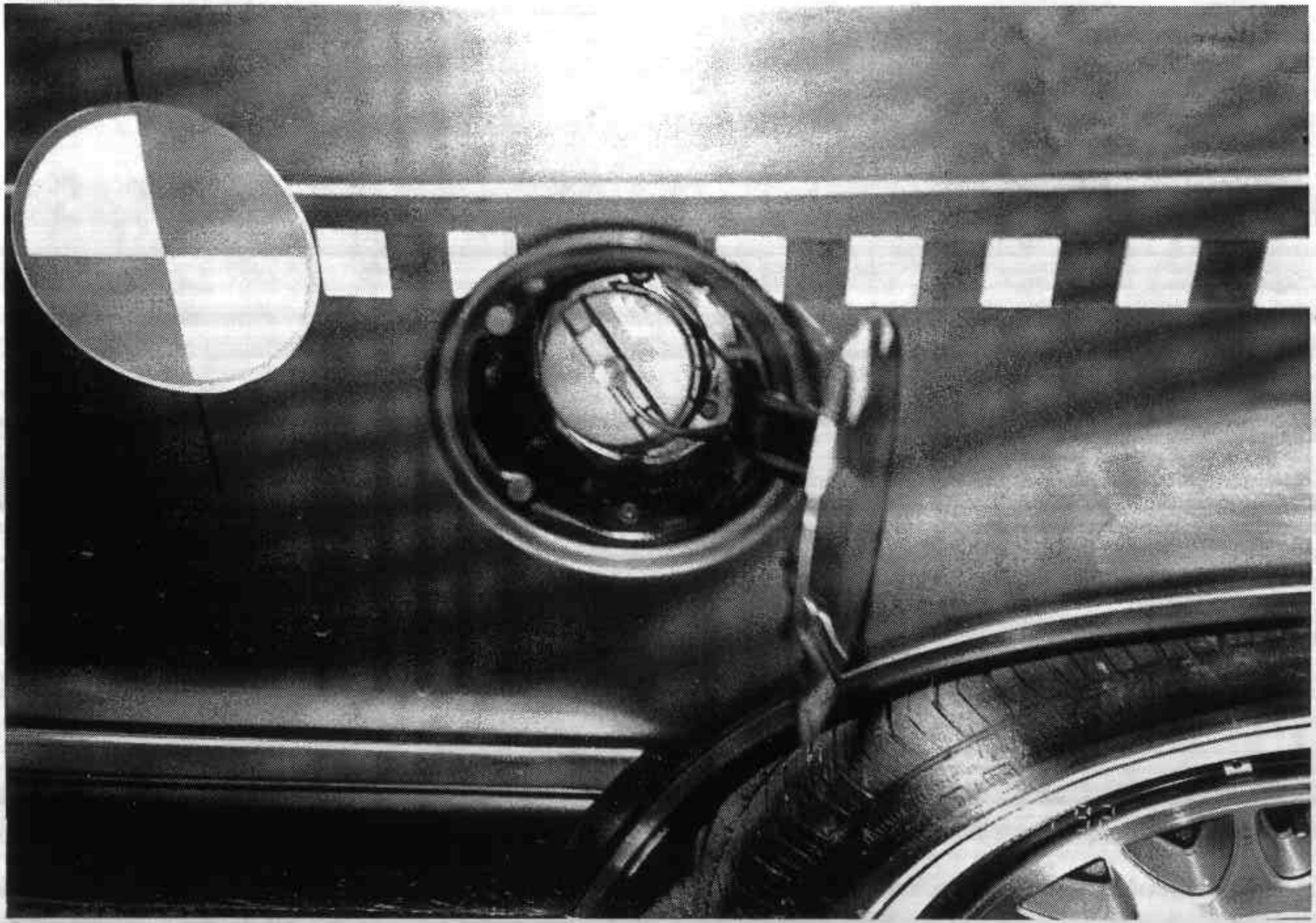


Figure A-14 FUEL CAP VIEW

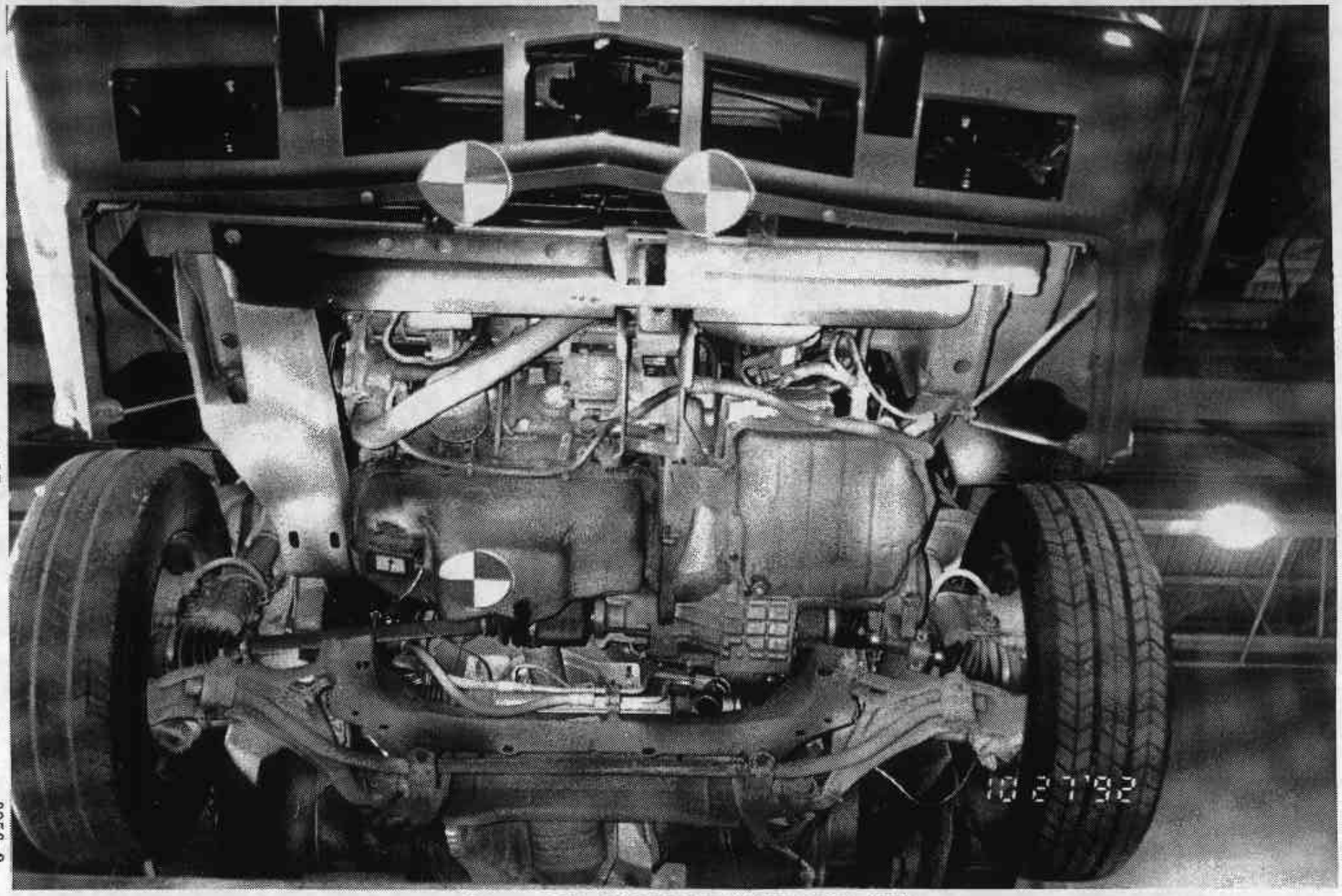


Figure A-15 PRE-TEST FRONT UNDERBODY VIEW

Figure A-16 POST-TEST FRONT UNDERBODY VIEW

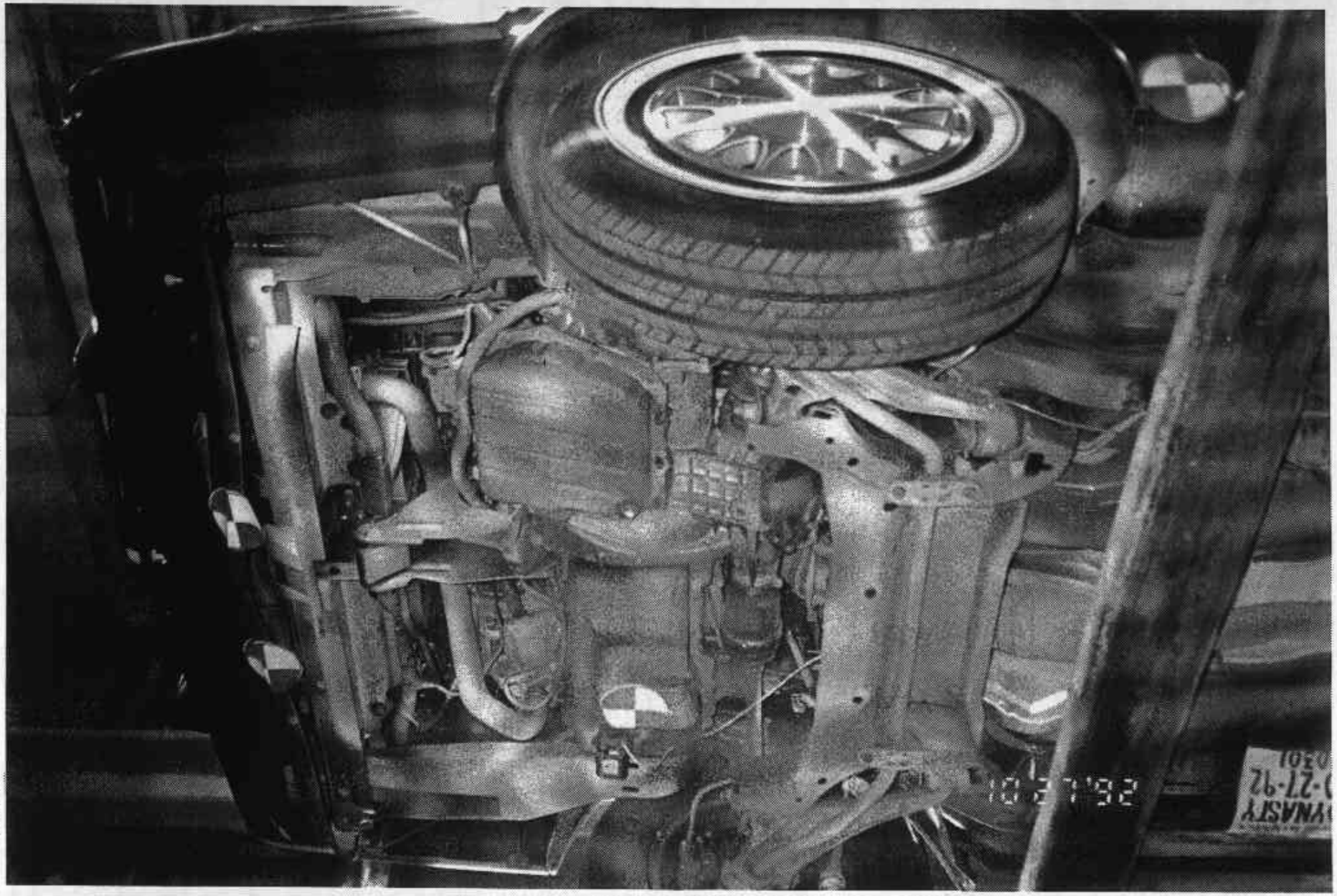


Figure A-17 PRE-TEST FRONT SIDE UNDERBODY VIEW

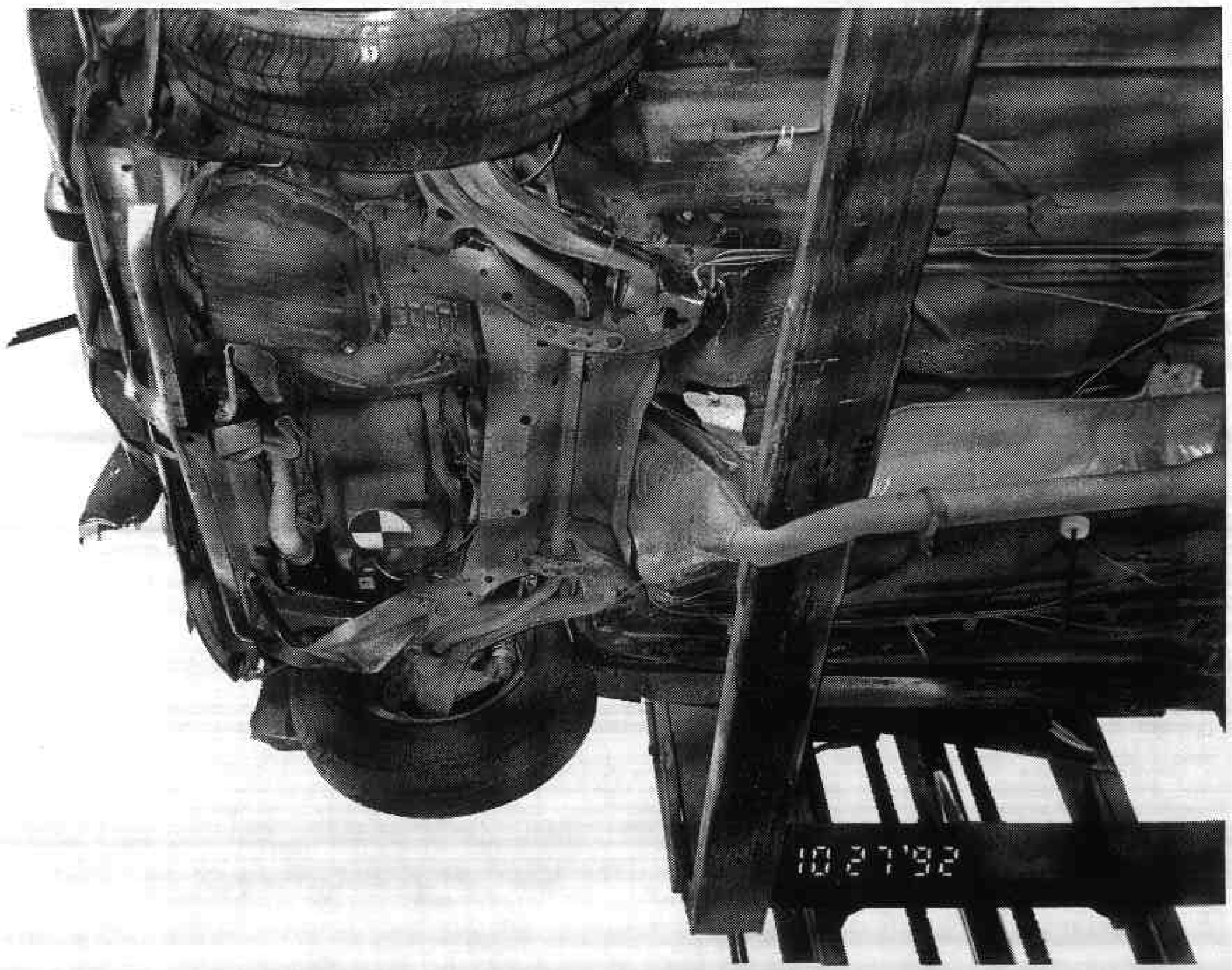


Figure A-18 POST-TEST FRONT SIDE UNDERBODY VIEW

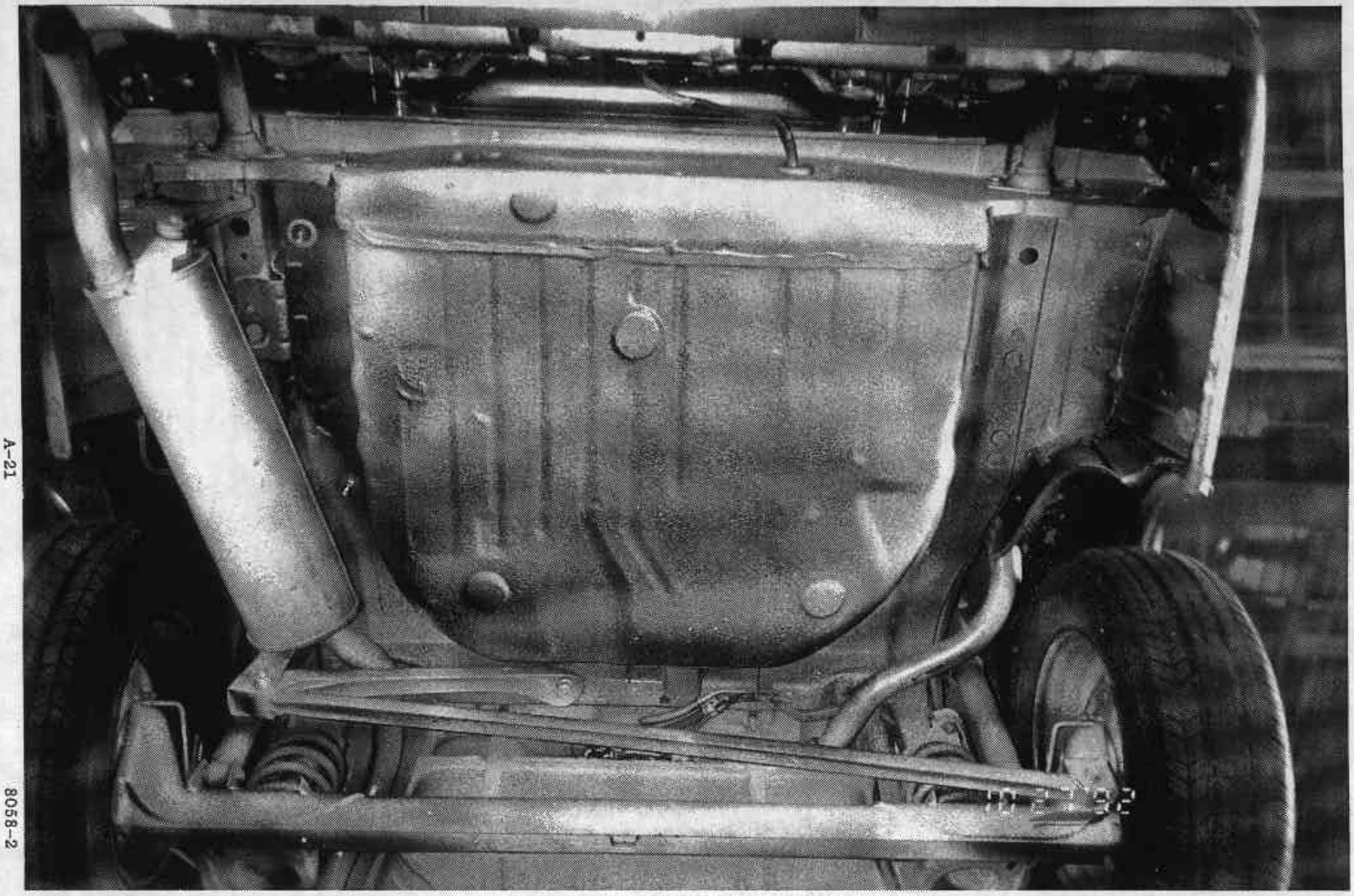


Figure A-19 PRE-TEST REAR UNDERBODY VIEW

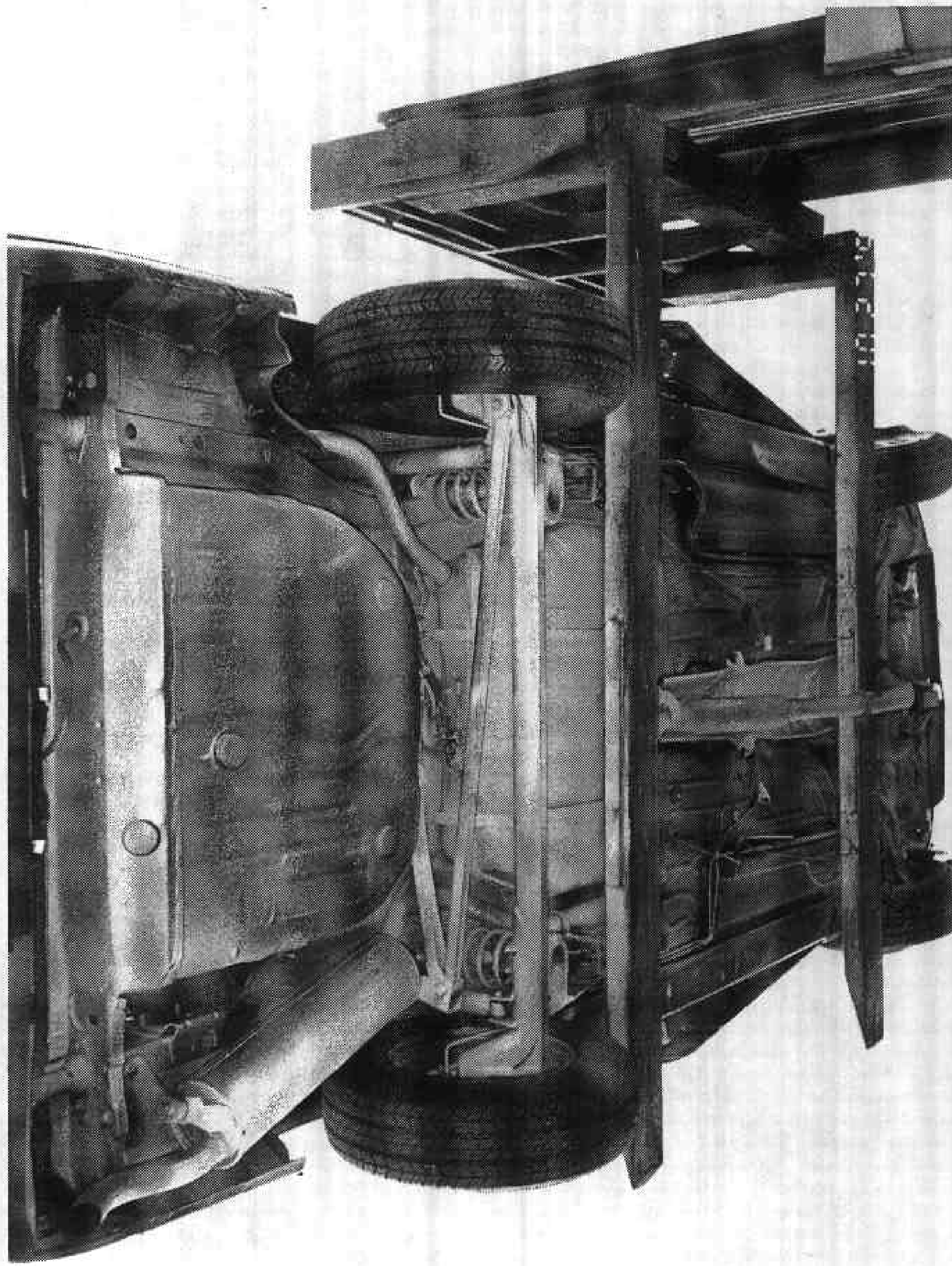


Figure A-20   POST-TEST REAR UNDERBODY VIEW

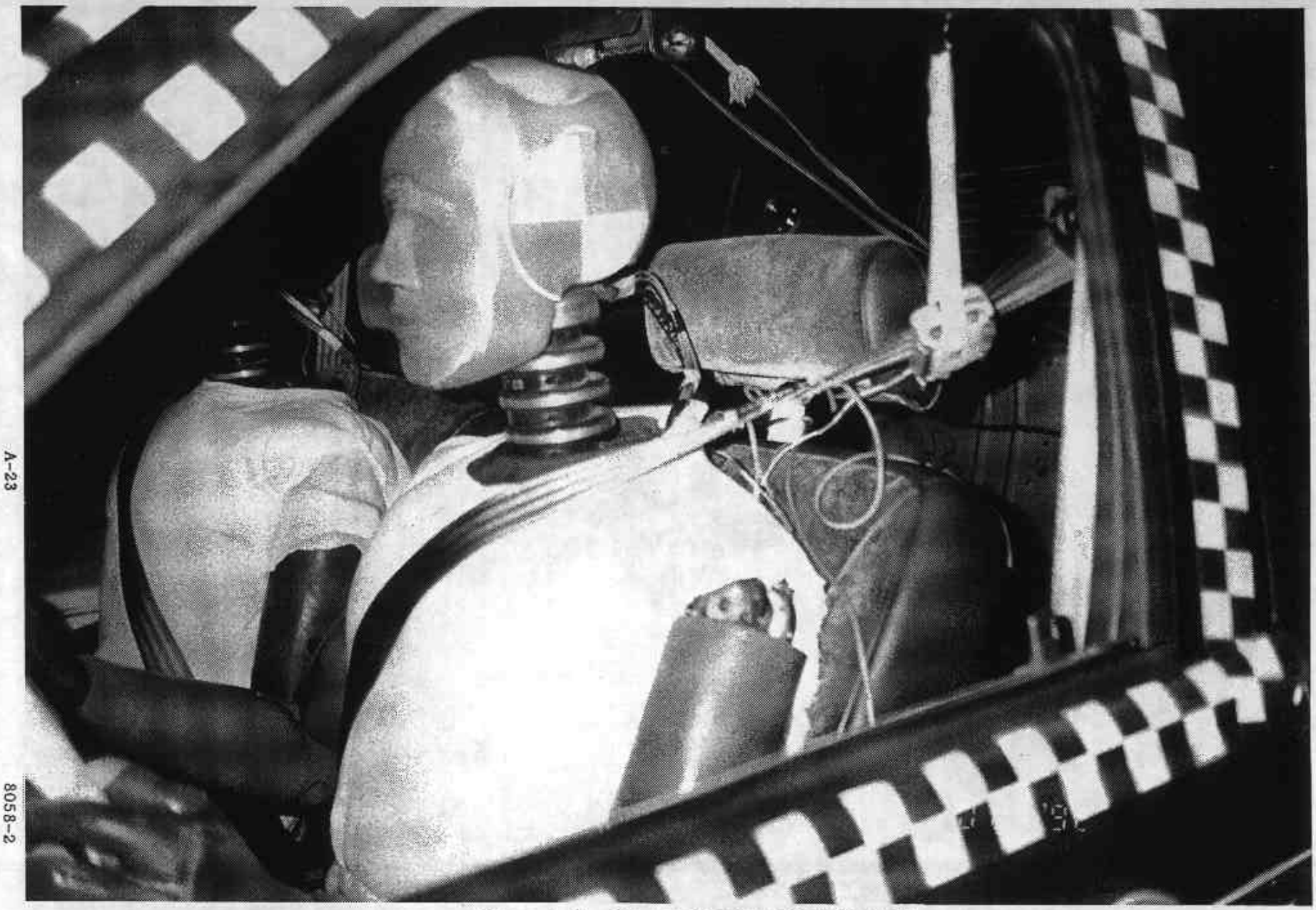


Figure A-21 PRE-TEST DRIVER POSITION VIEW

8058-2

Figure A-22 POST-TEST DRIVER POSITION VIEW

A-25

8058-2

Figure A-23 PRE-TEST PASSENGER POSITION VIEW

Figure A-24 POST-TEST PASSENGER POSITION VIEW

Figure A-25 PRE-TEST DRIVER AND INTERIOR VIEW

Figure A-26 POST-TEST DRIVER AND INTERIOR VIEW

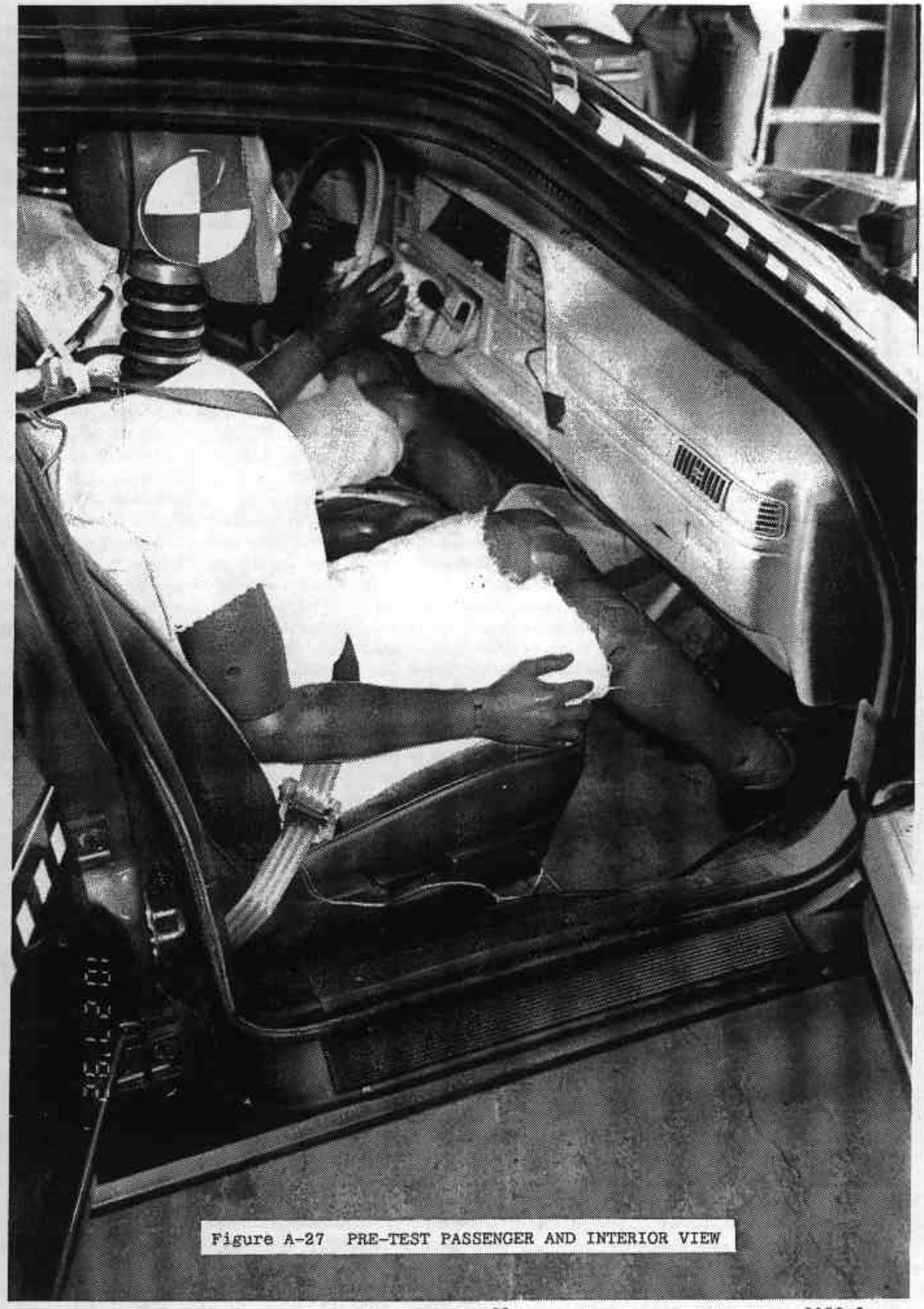


Figure A-27 PRE-TEST PASSENGER AND INTERIOR VIEW

Figure A-28 POST-TEST PASSENGER AND INTERIOR VIEW

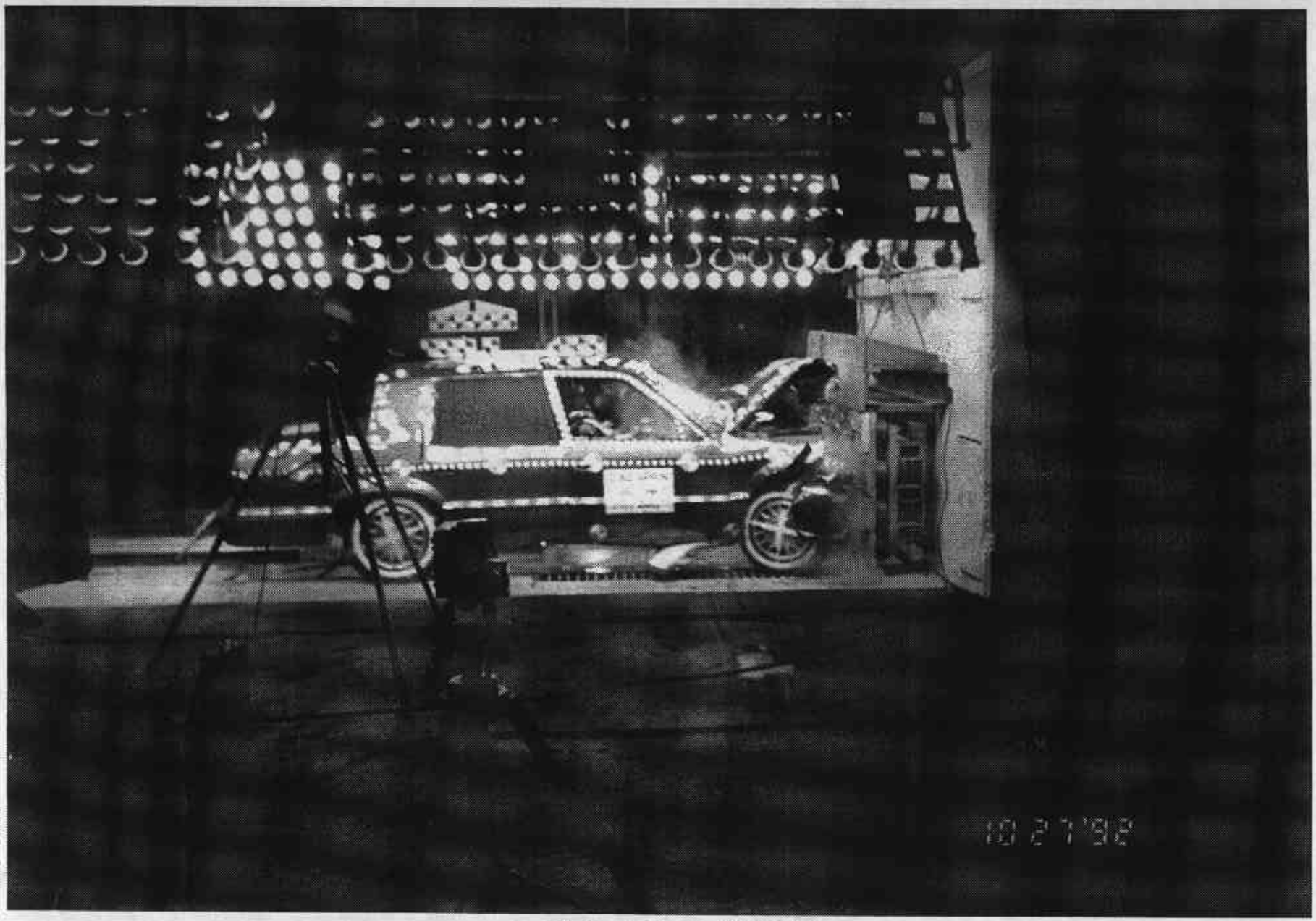


Figure A-29 IMPACT VIEW

Appendix B

VEHICLE, LOAD CELL BARRIER AND DUMMY RESPONSE DATA

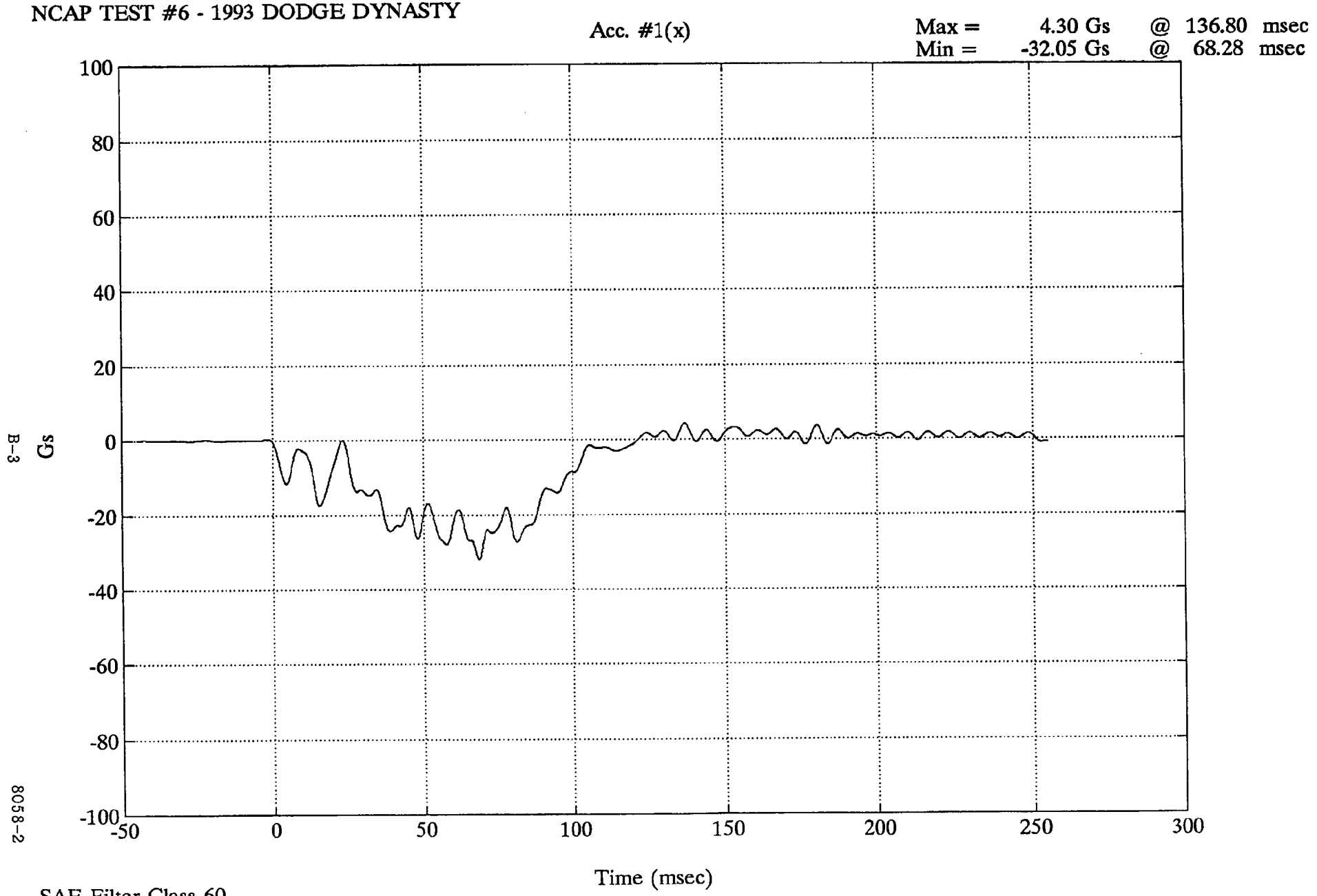
TEST NO. MP0301

VEHICLE DATA

FILTER CHANNEL CLASS

60

NCAP TEST #6 - 1993 DODGE DYNASTY

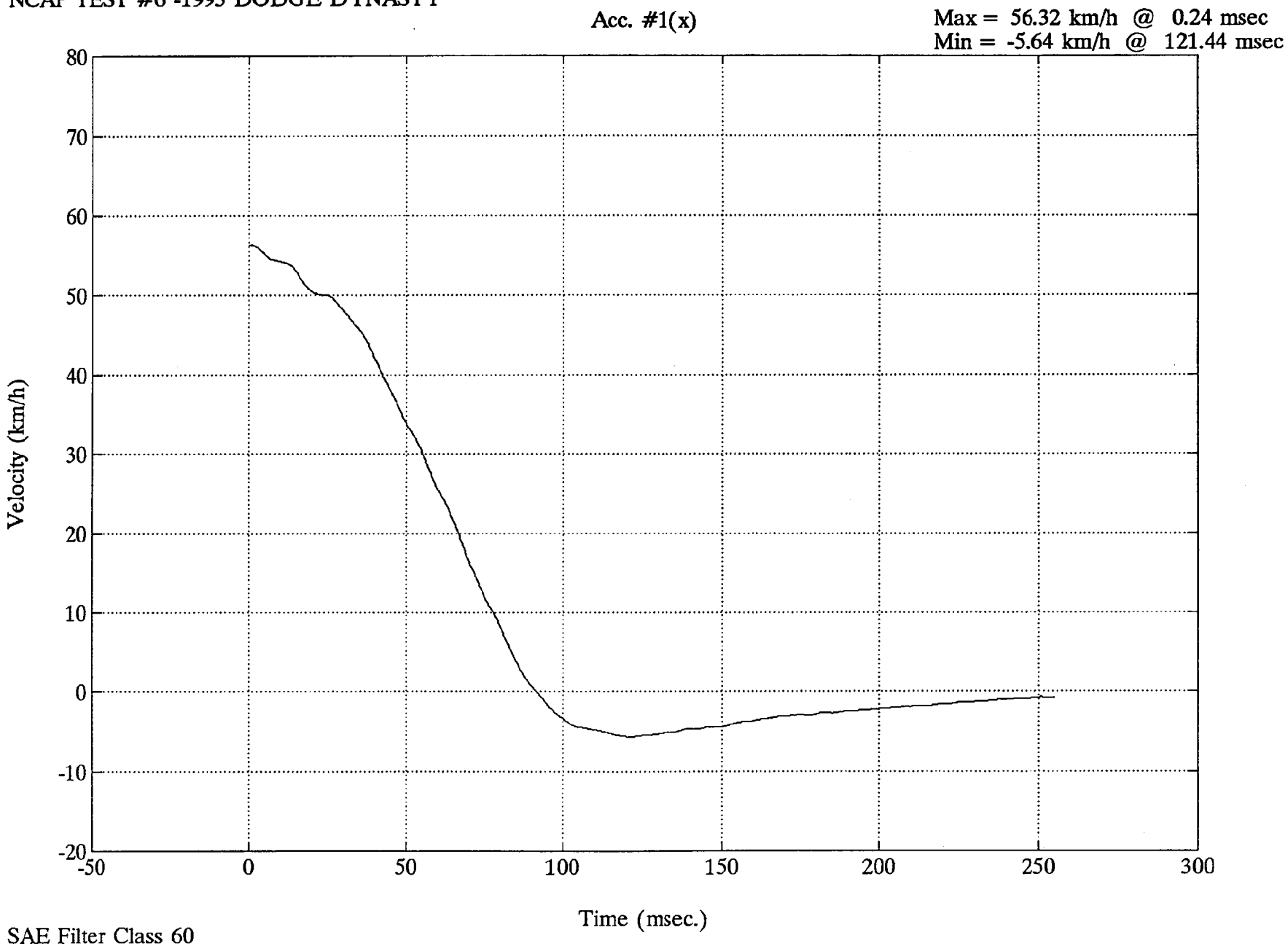


SAE Filter Class 60

B-3

8058-2

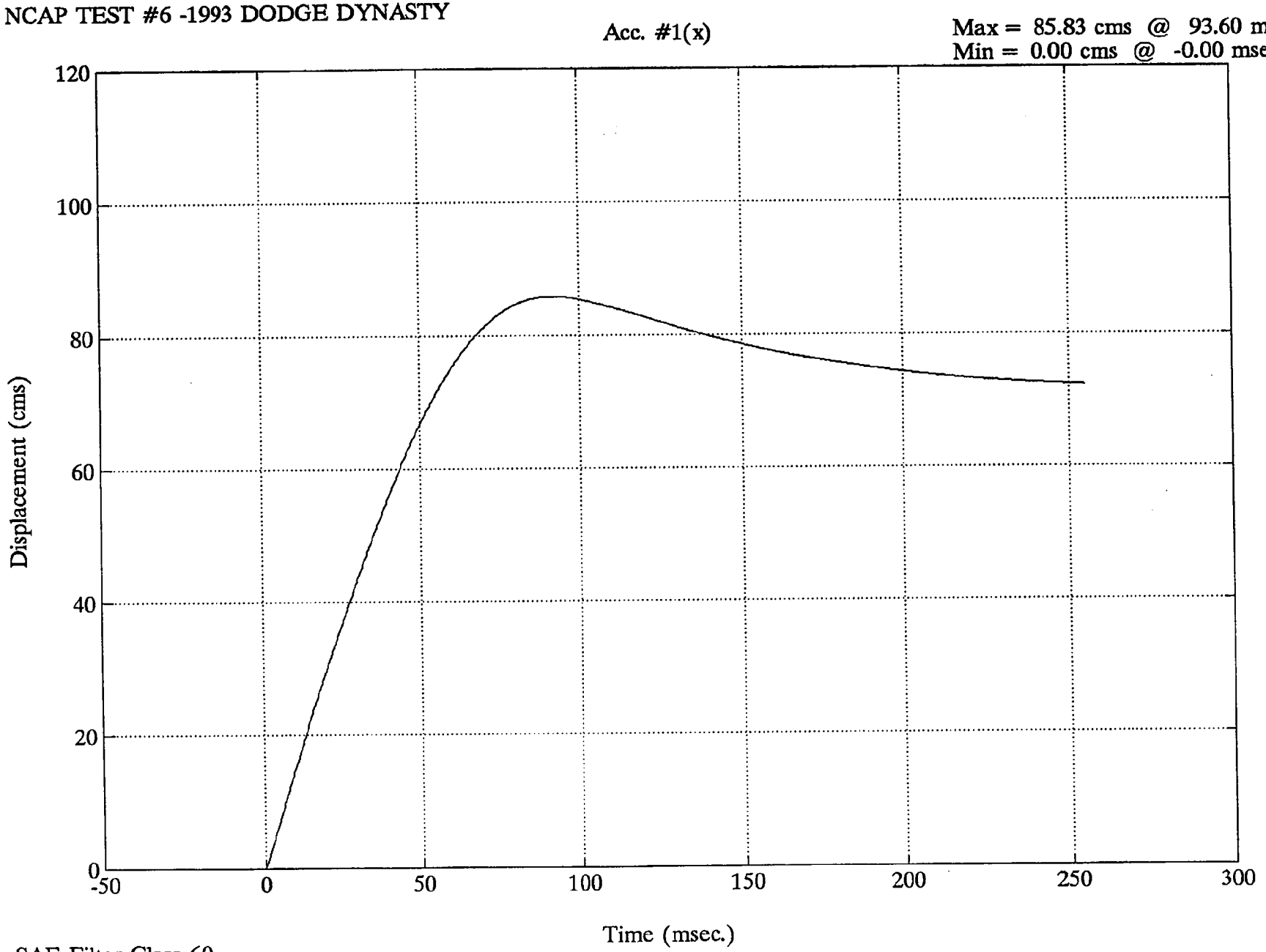
NCAP TEST #6 -1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

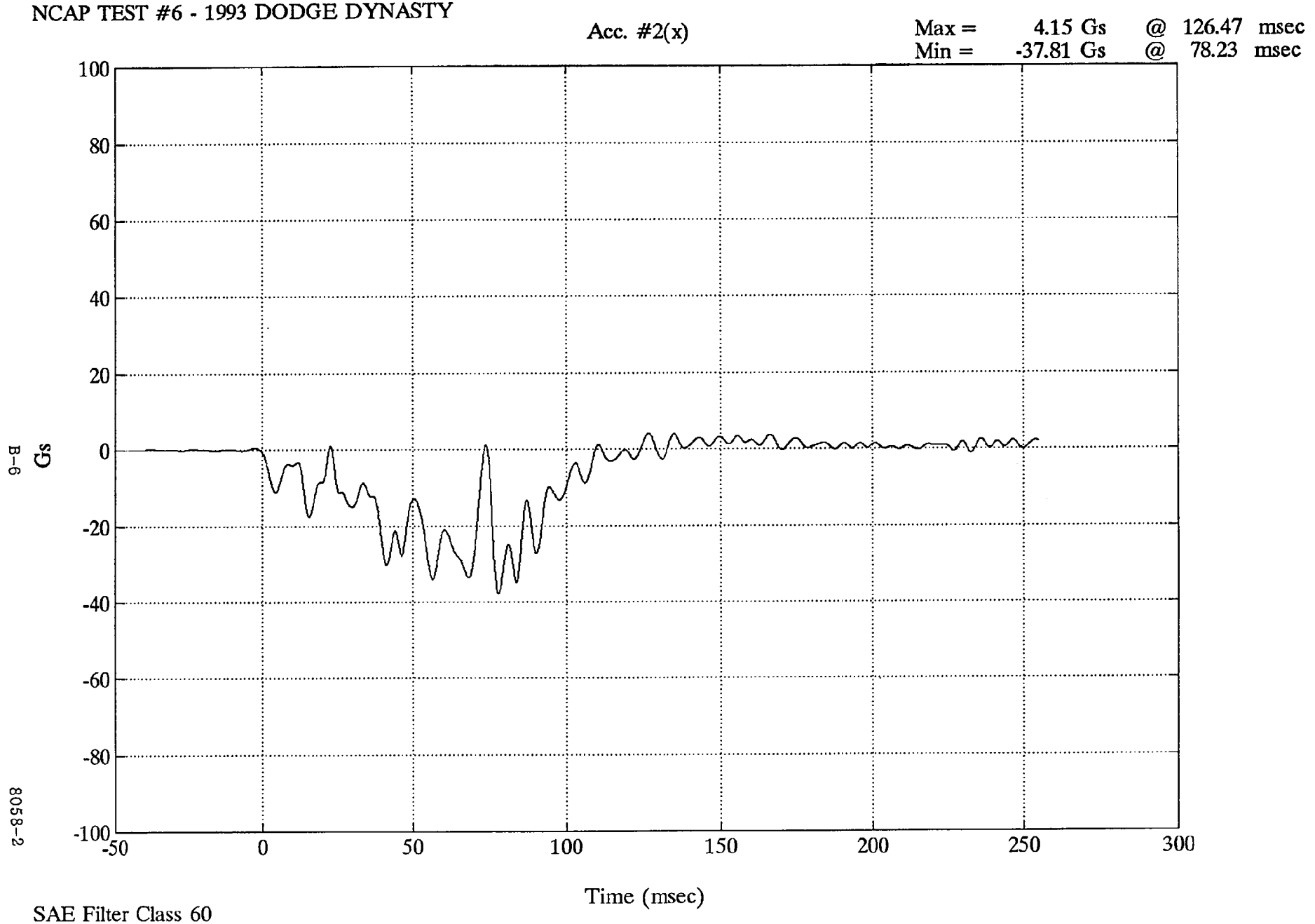
NCAP TEST #6 -1993 DODGE DYNASTY



SAE Filter Class 60

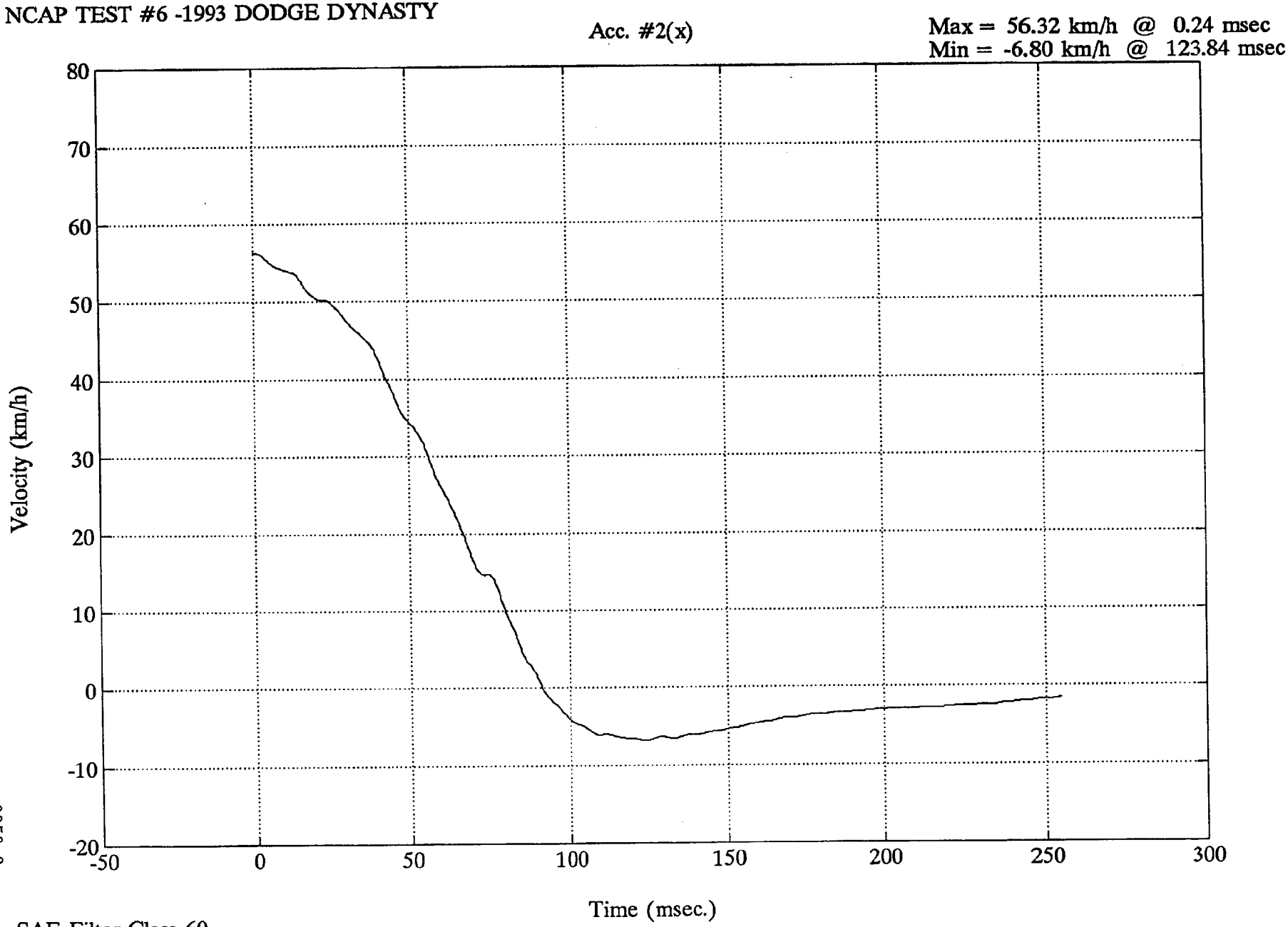
8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

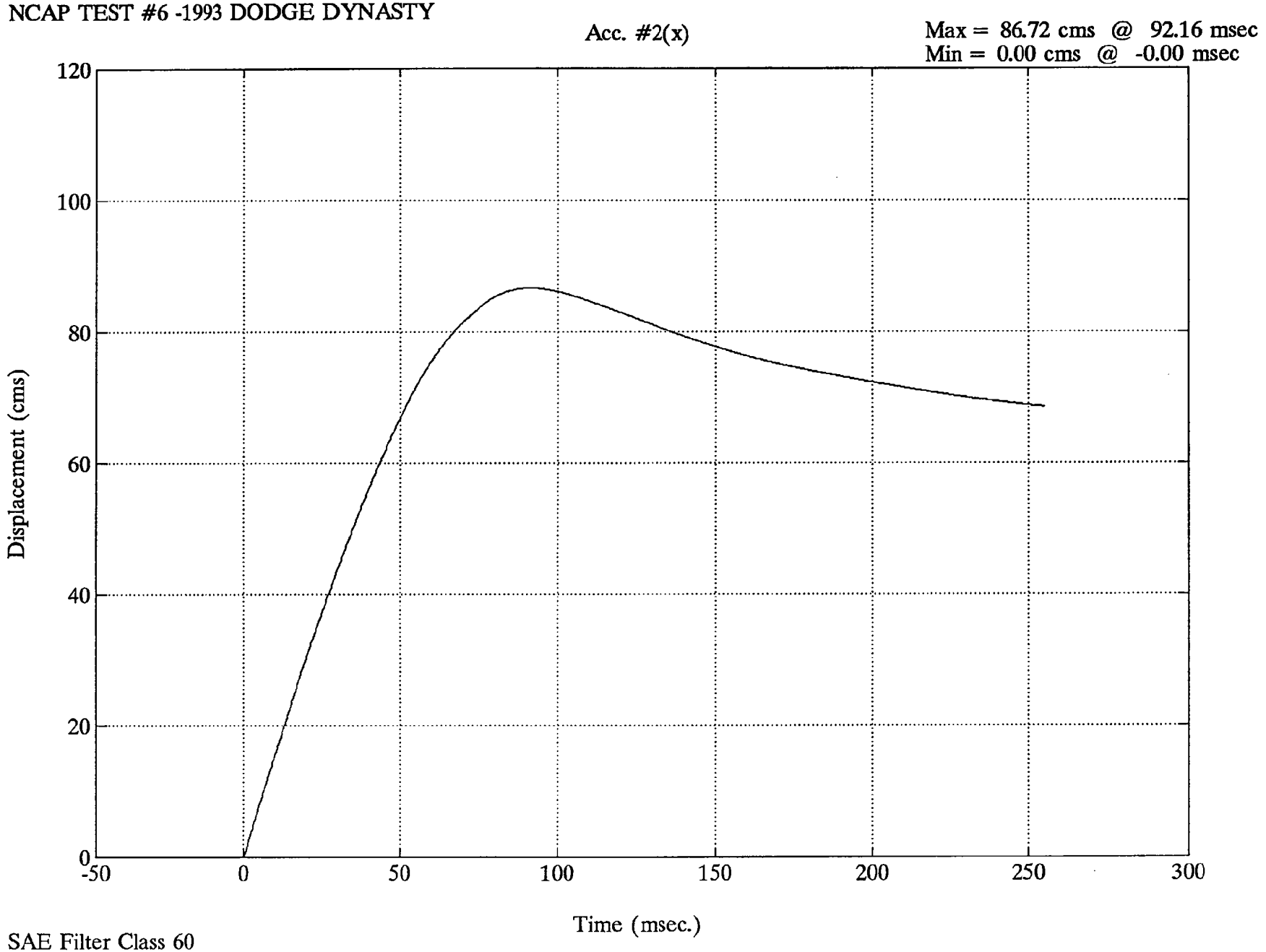
NCAP TEST #6 -1993 DODGE DYNASTY



SAE Filter Class 60

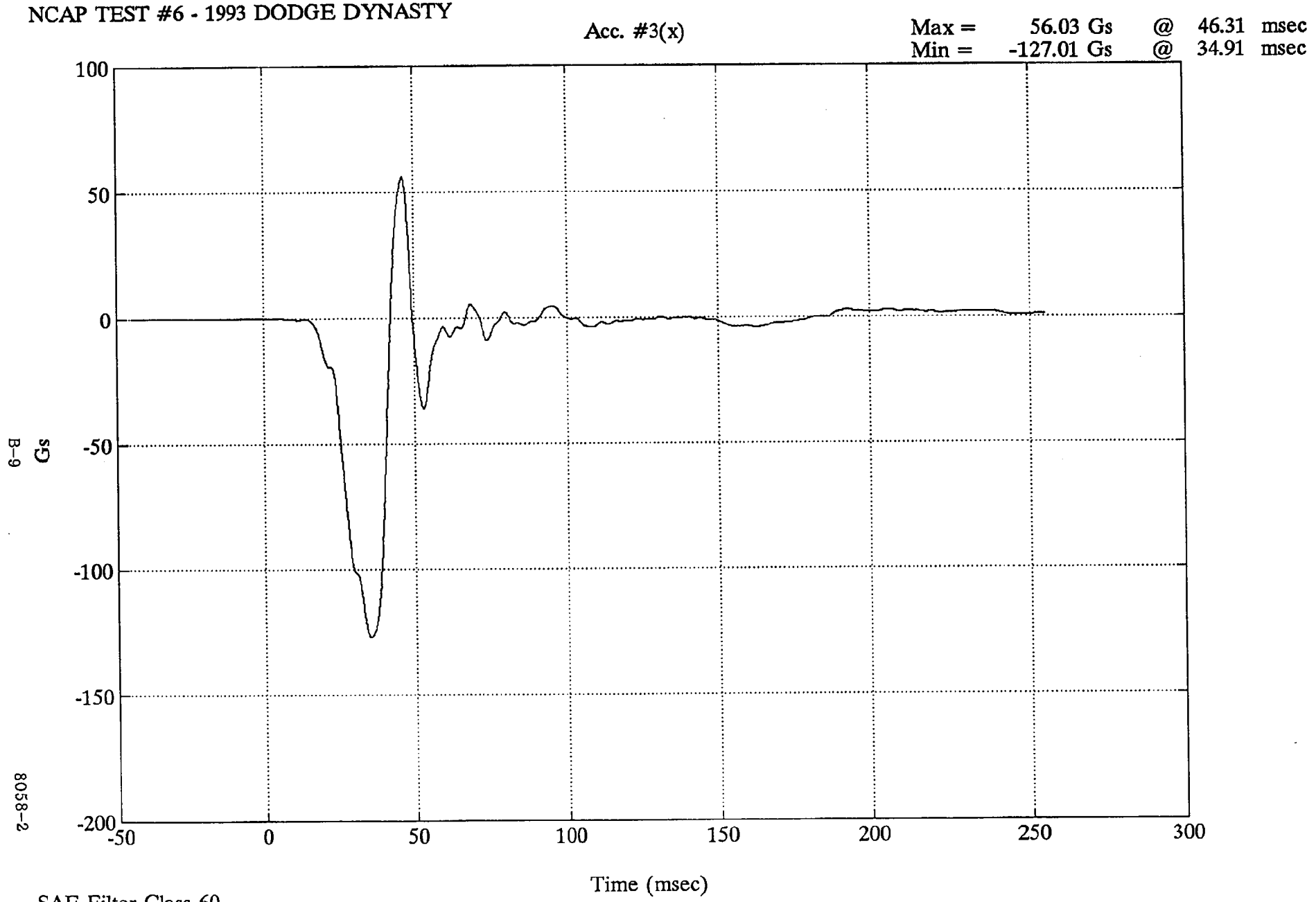
8058-2

NCAP TEST #6 -1993 DODGE DYNASTY



SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY

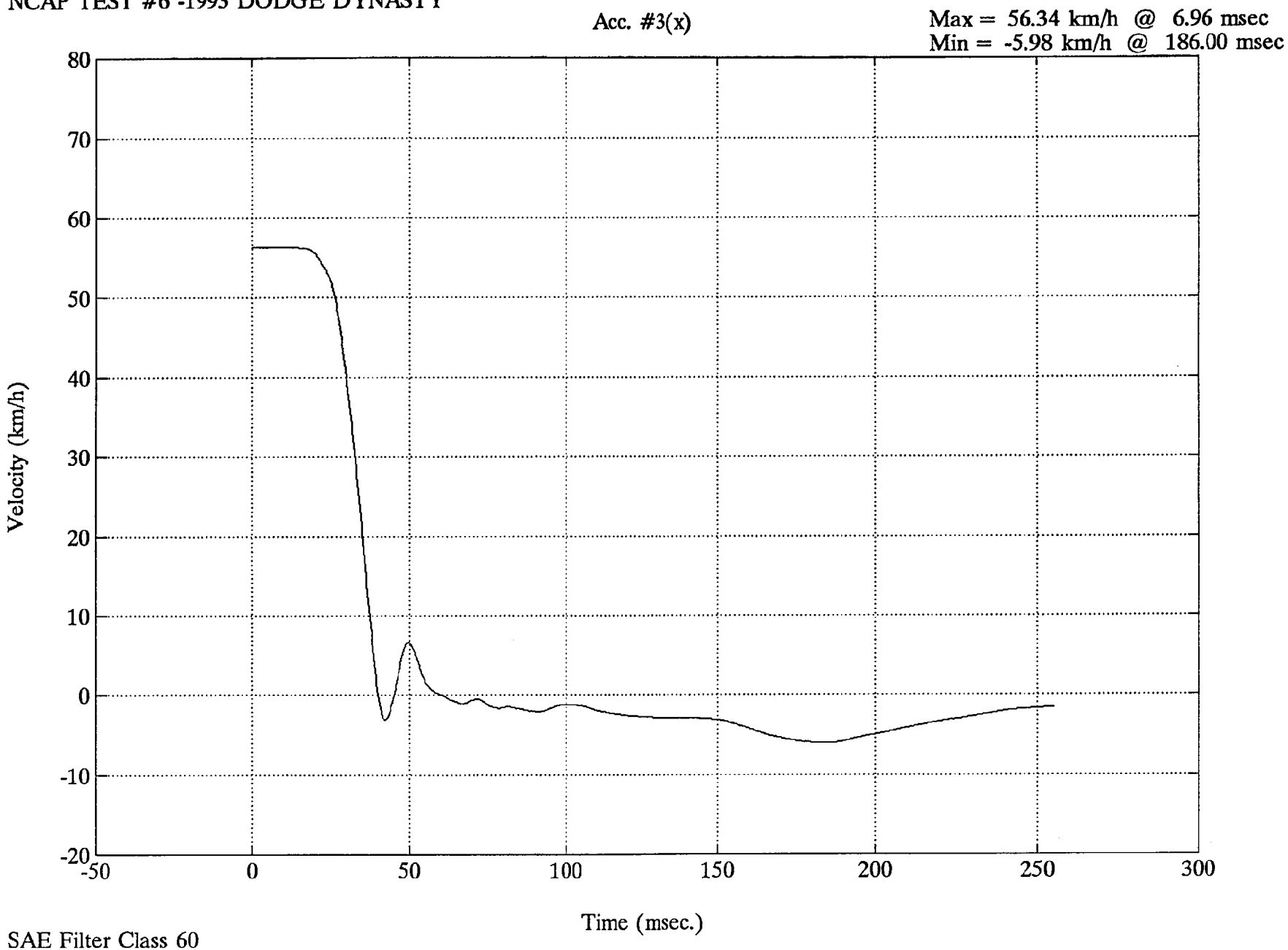


B-9

8058-2

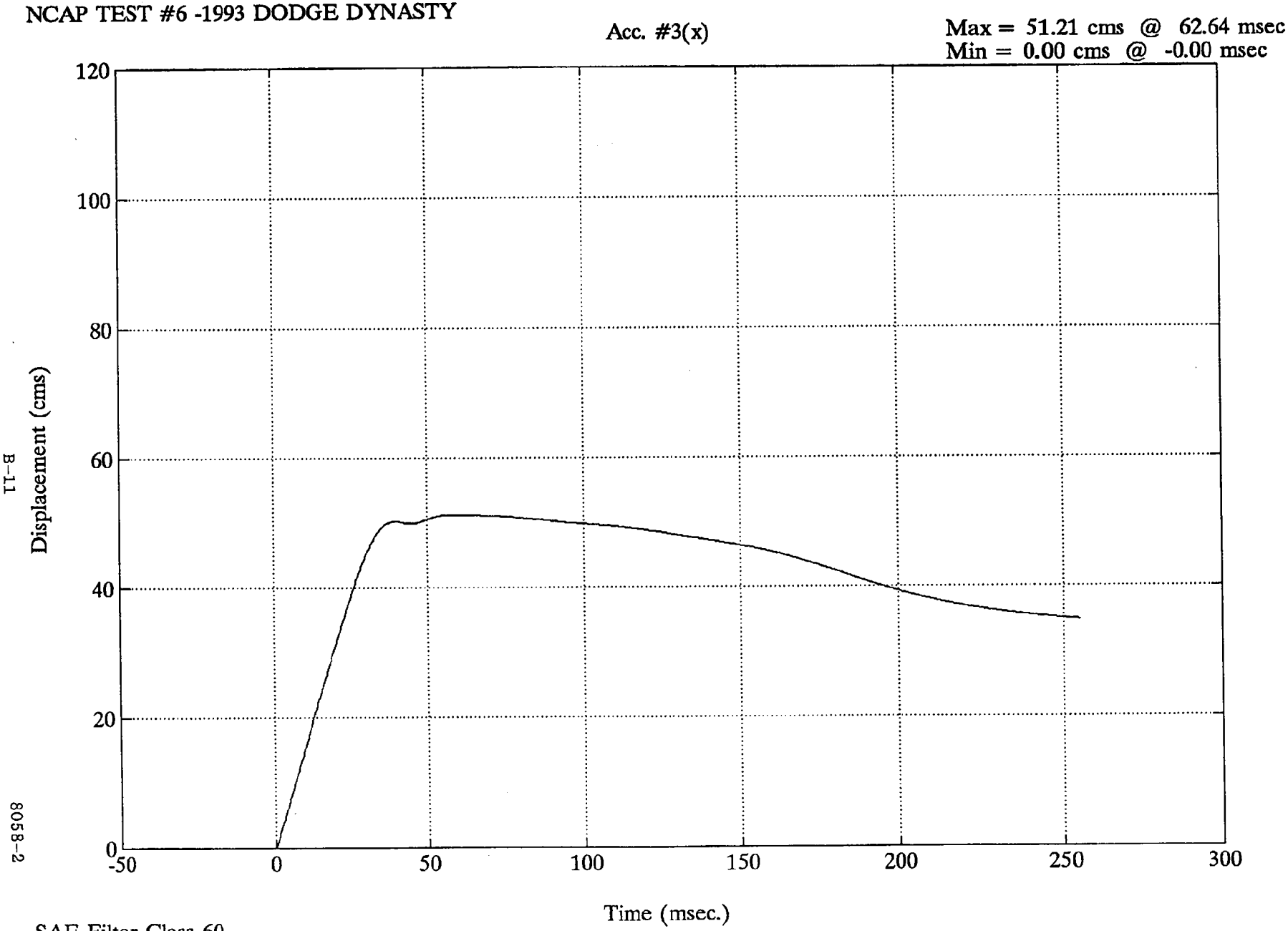
SAE Filter Class 60

NCAP TEST #6 -1993 DODGE DYNASTY



SAE Filter Class 60

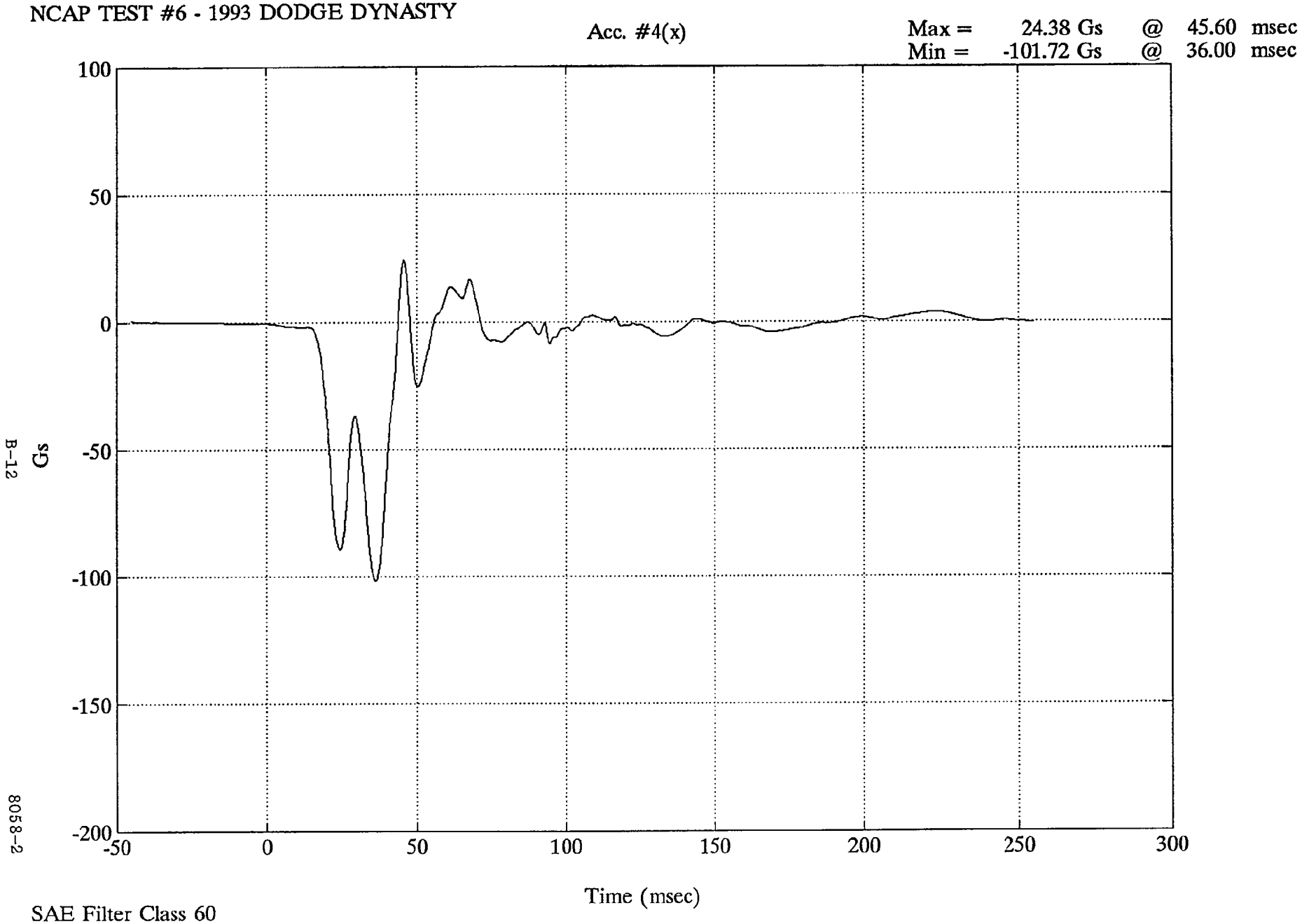
NCAP TEST #6 -1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY

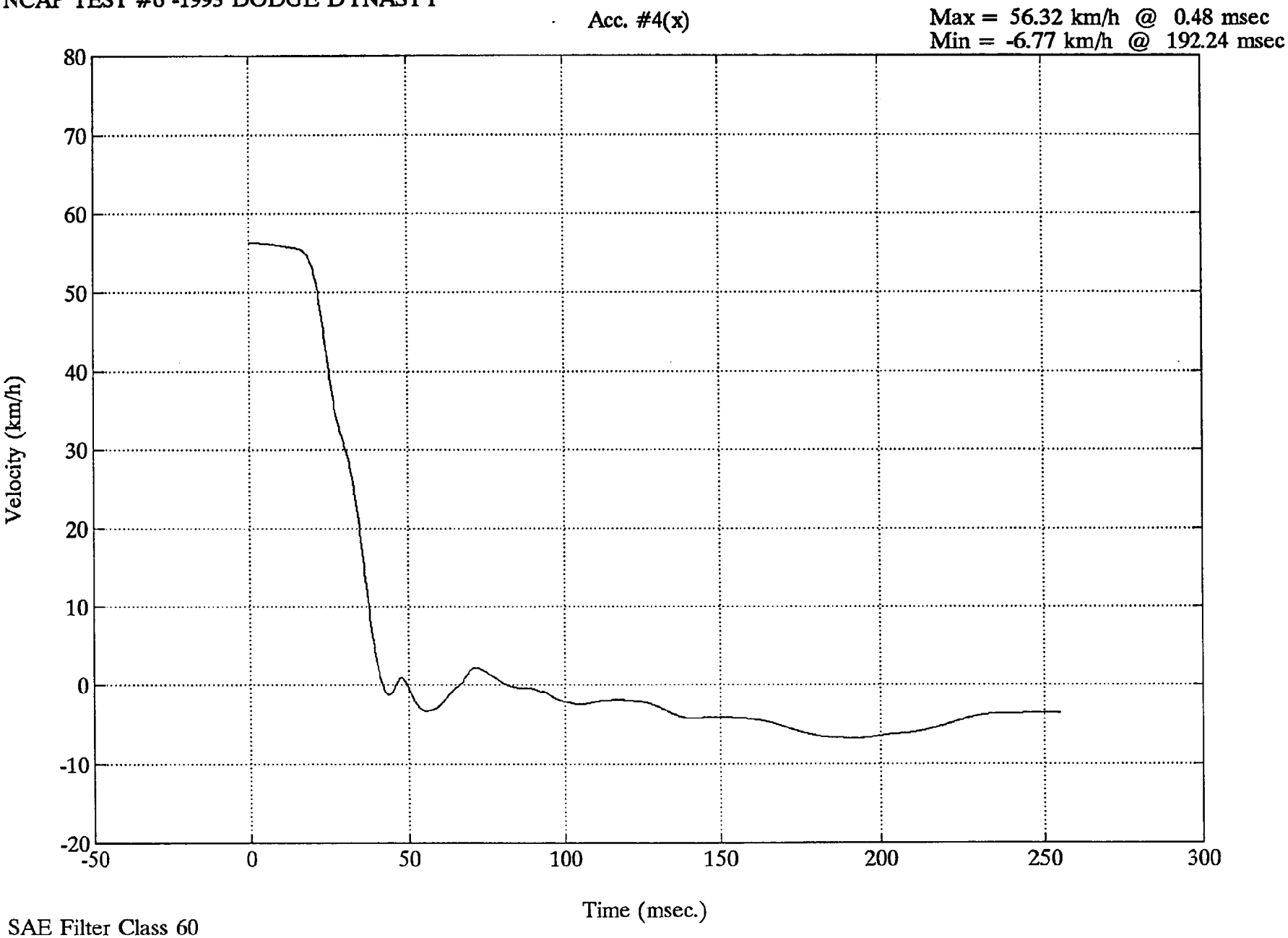


B-12

8058-2

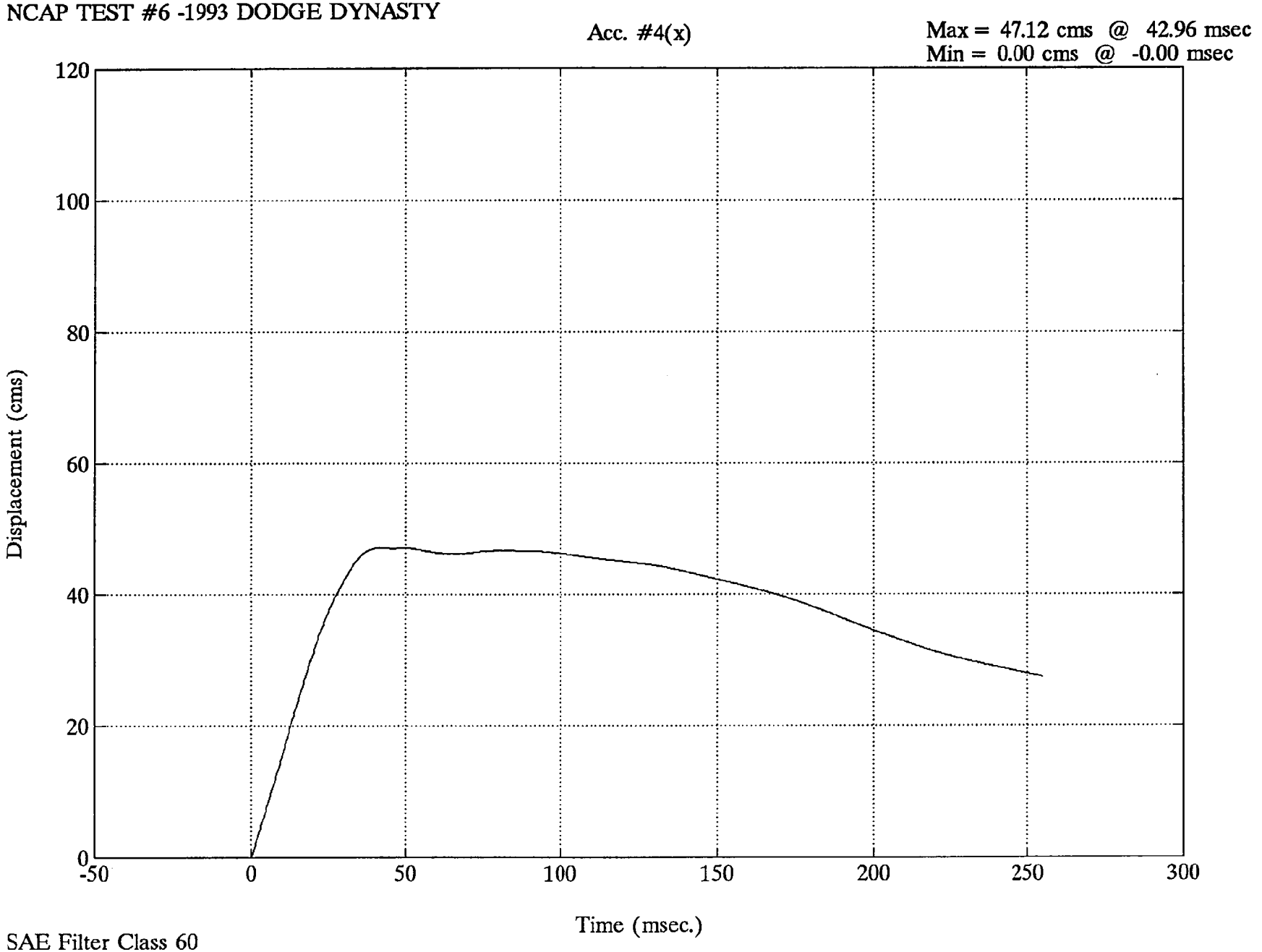
SAE Filter Class 60

NCAP TEST #6 -1993 DODGE DYNASTY



SAE Filter Class 60

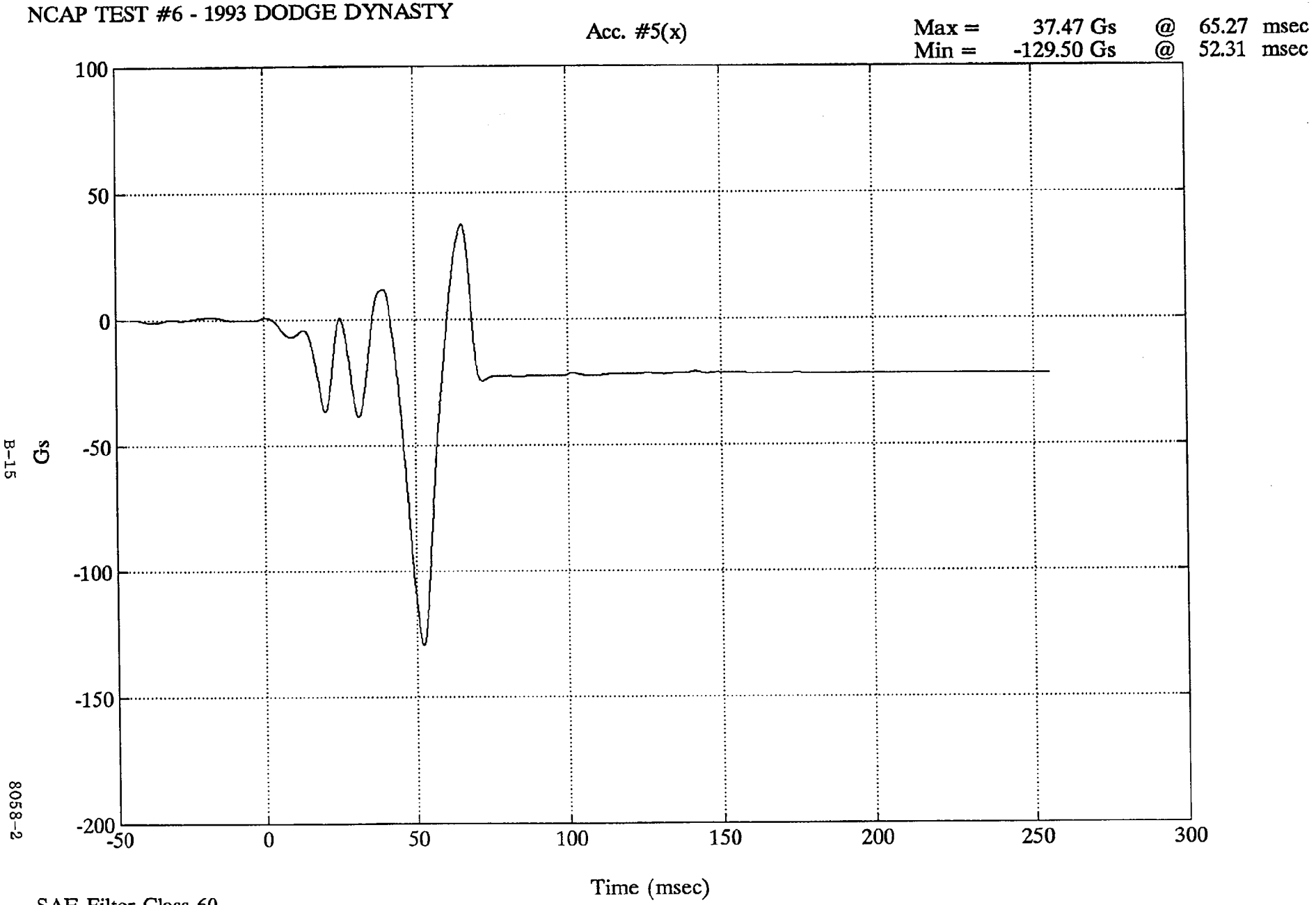
NCAP TEST #6 -1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY

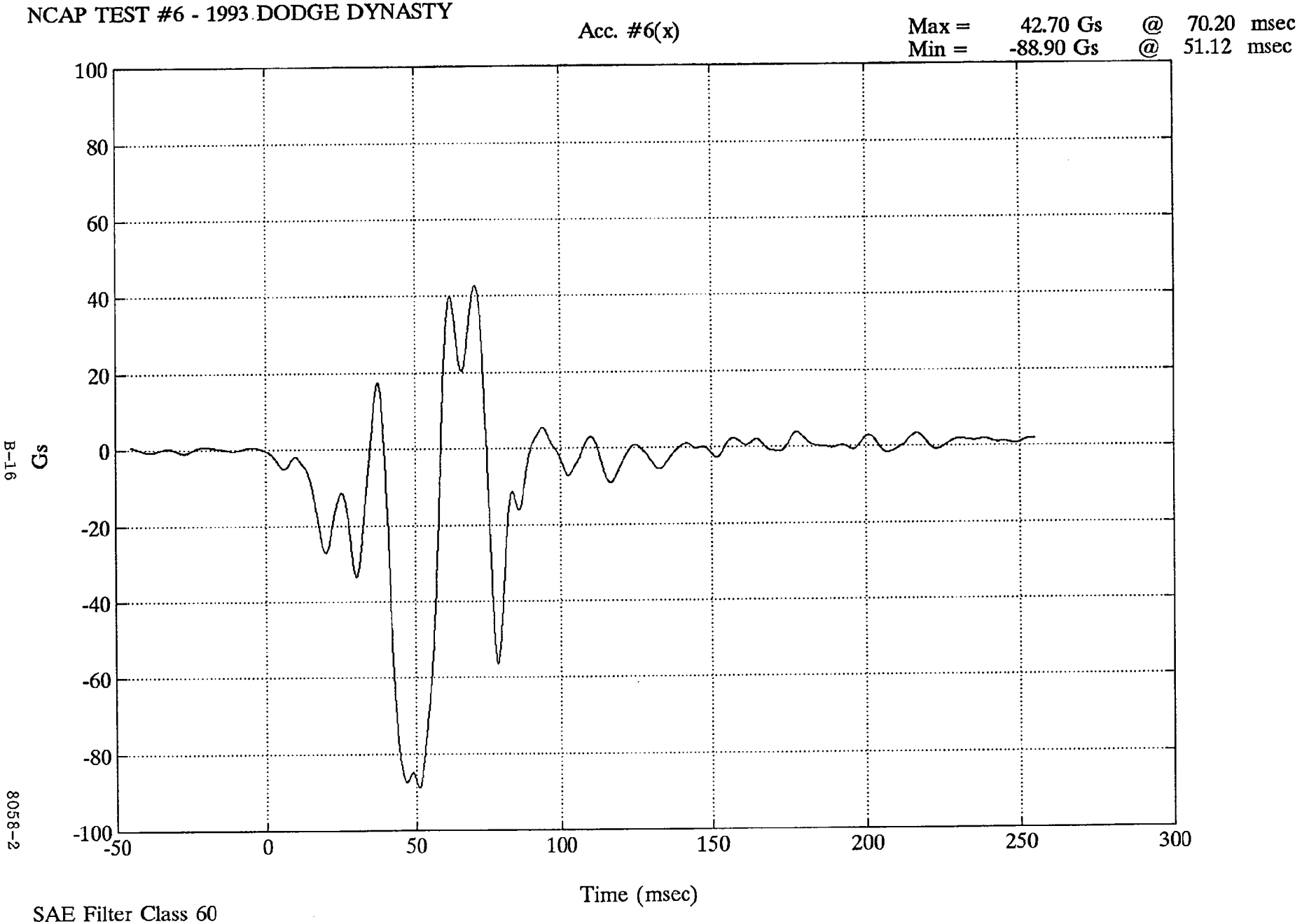


B-15

8058-2

SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY

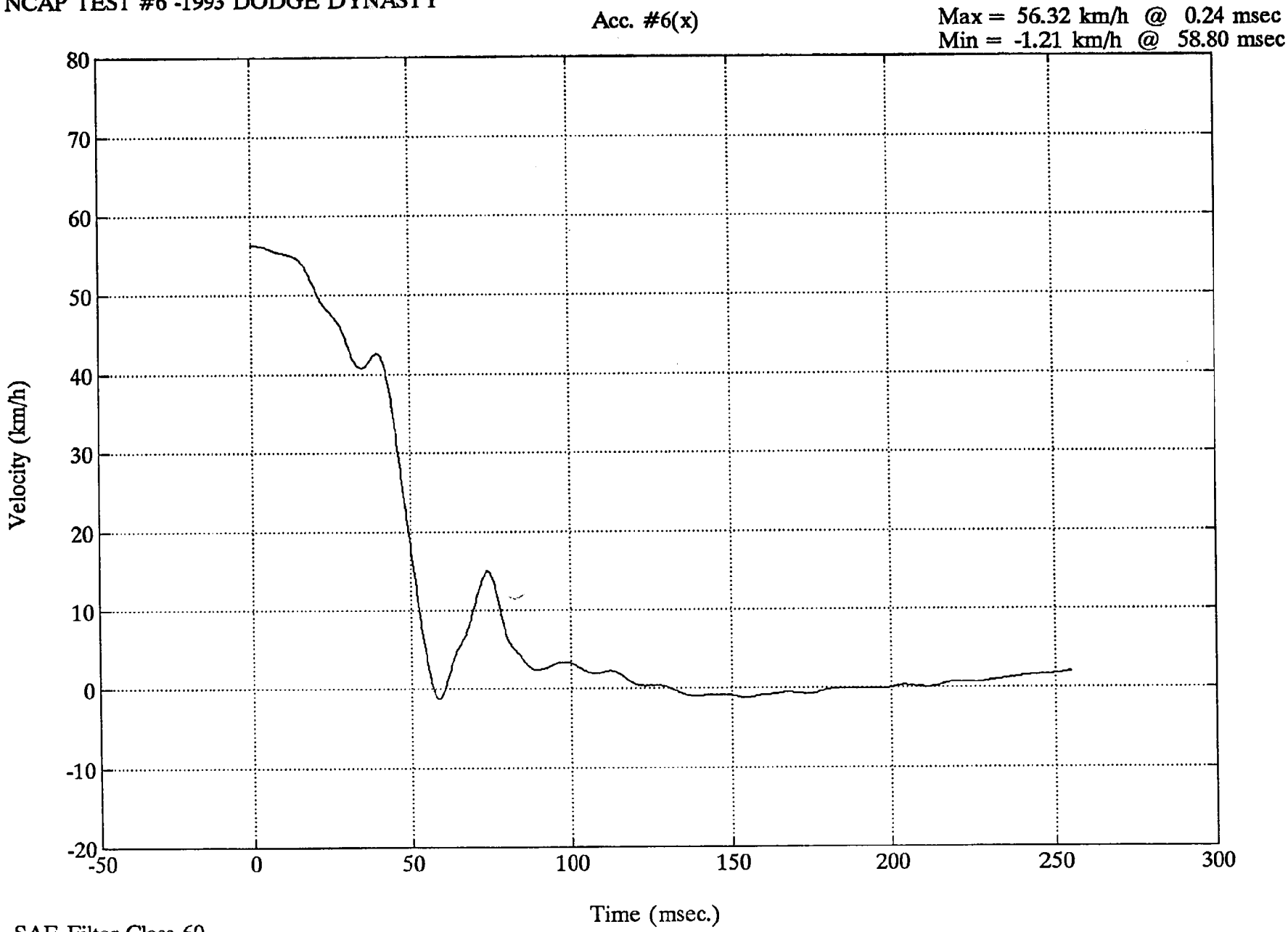


B-16

8058-2

SAE Filter Class 60

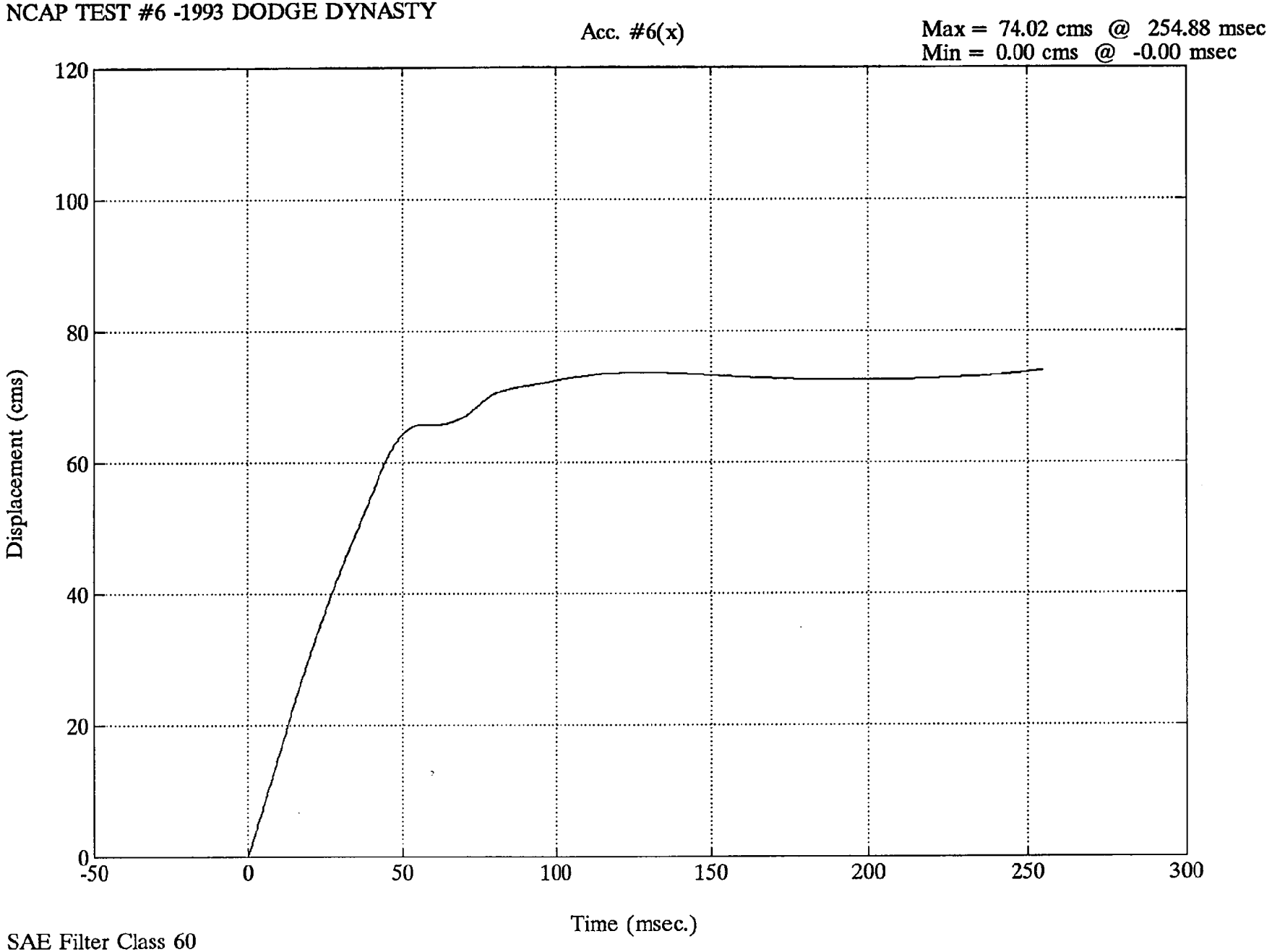
NCAP TEST #6 -1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

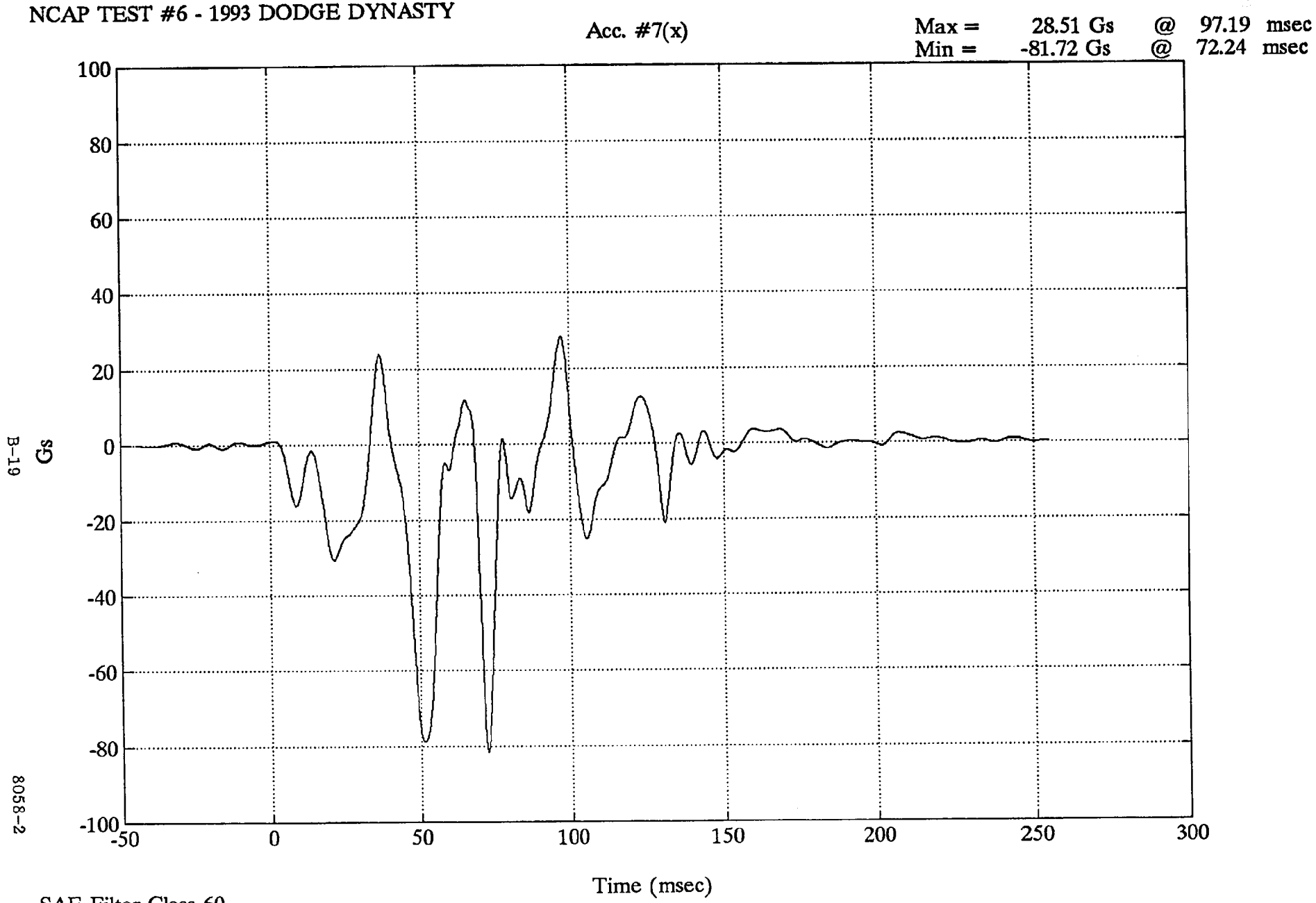
NCAP TEST #6 -1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

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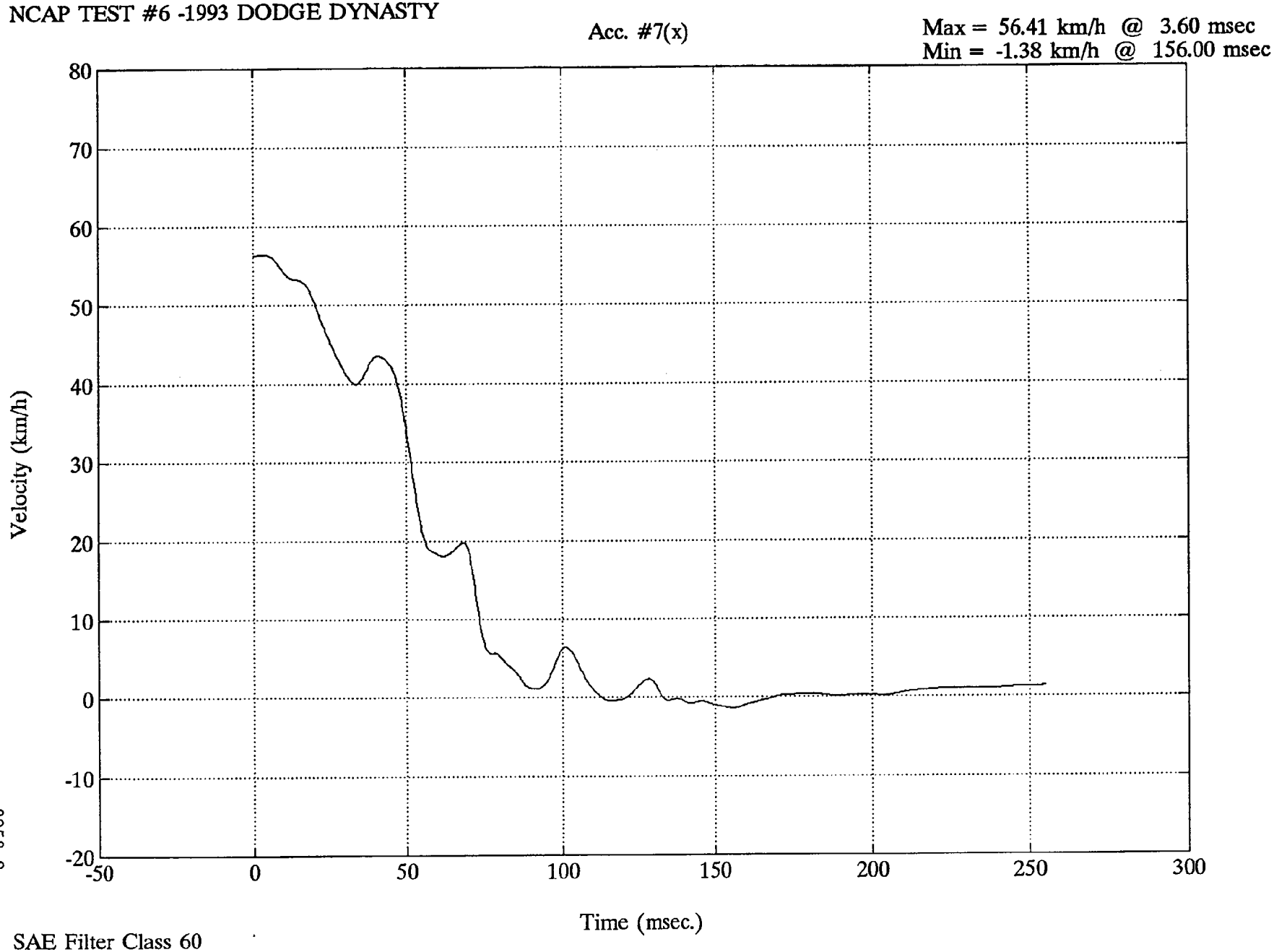
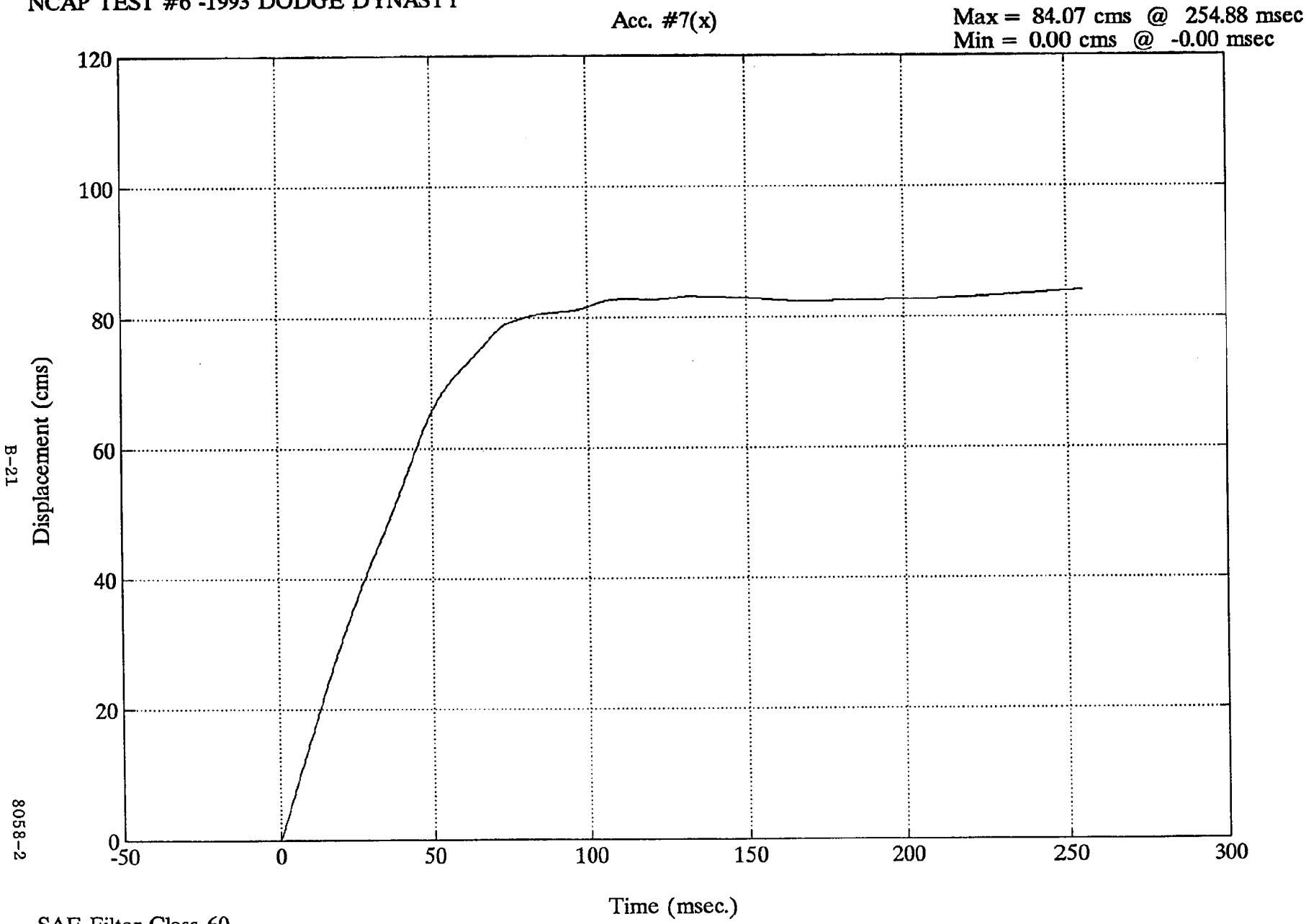


B-20

8058-2

SAE Filter Class 60

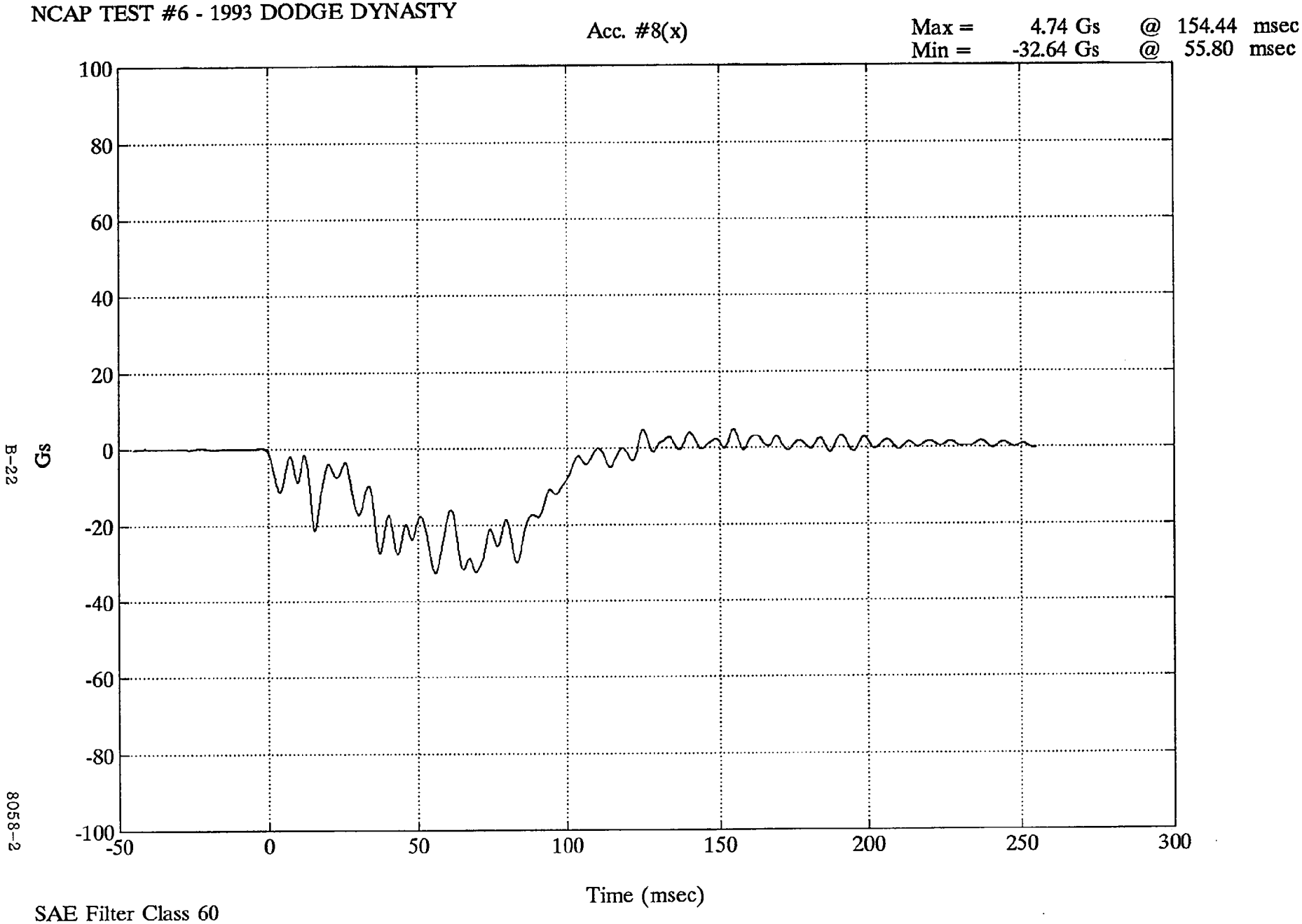
NCAP TEST #6 -1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY

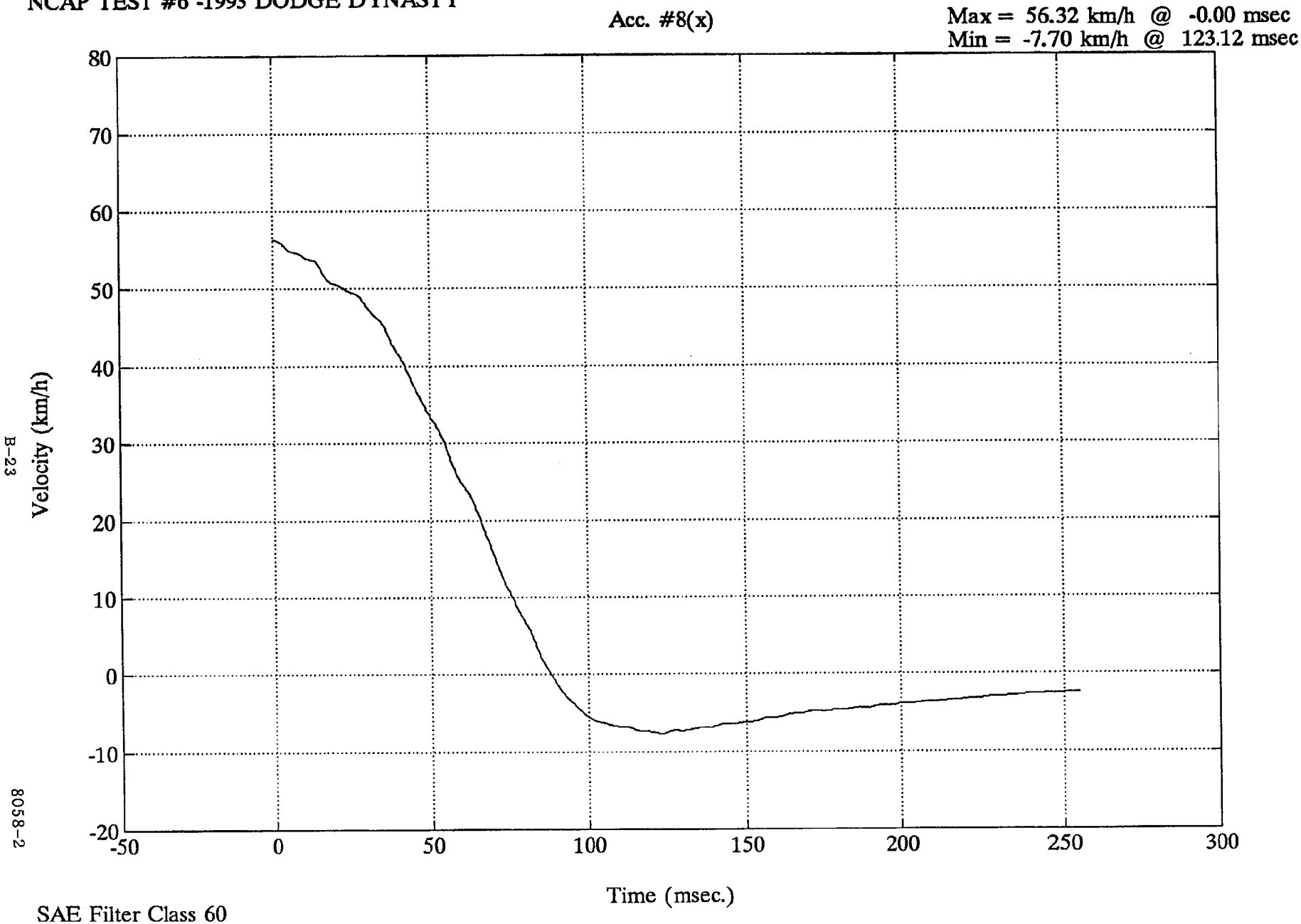


SAE Filter Class 60

B-22

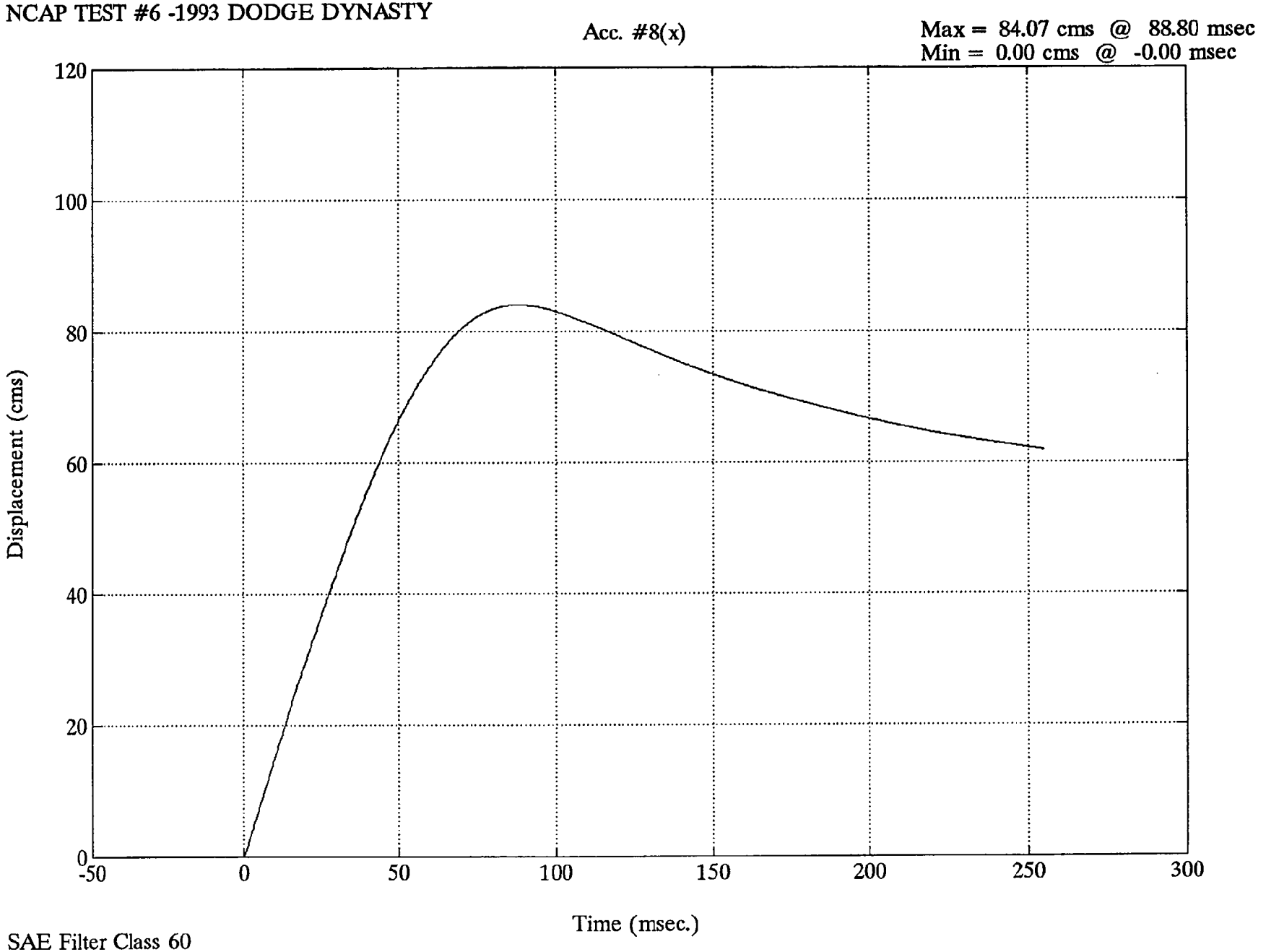
8058-2

NCAP TEST #6 -1993 DODGE DYNASTY



SAE Filter Class 60

NCAP TEST #6 -1993 DODGE DYNASTY



SAE Filter Class 60

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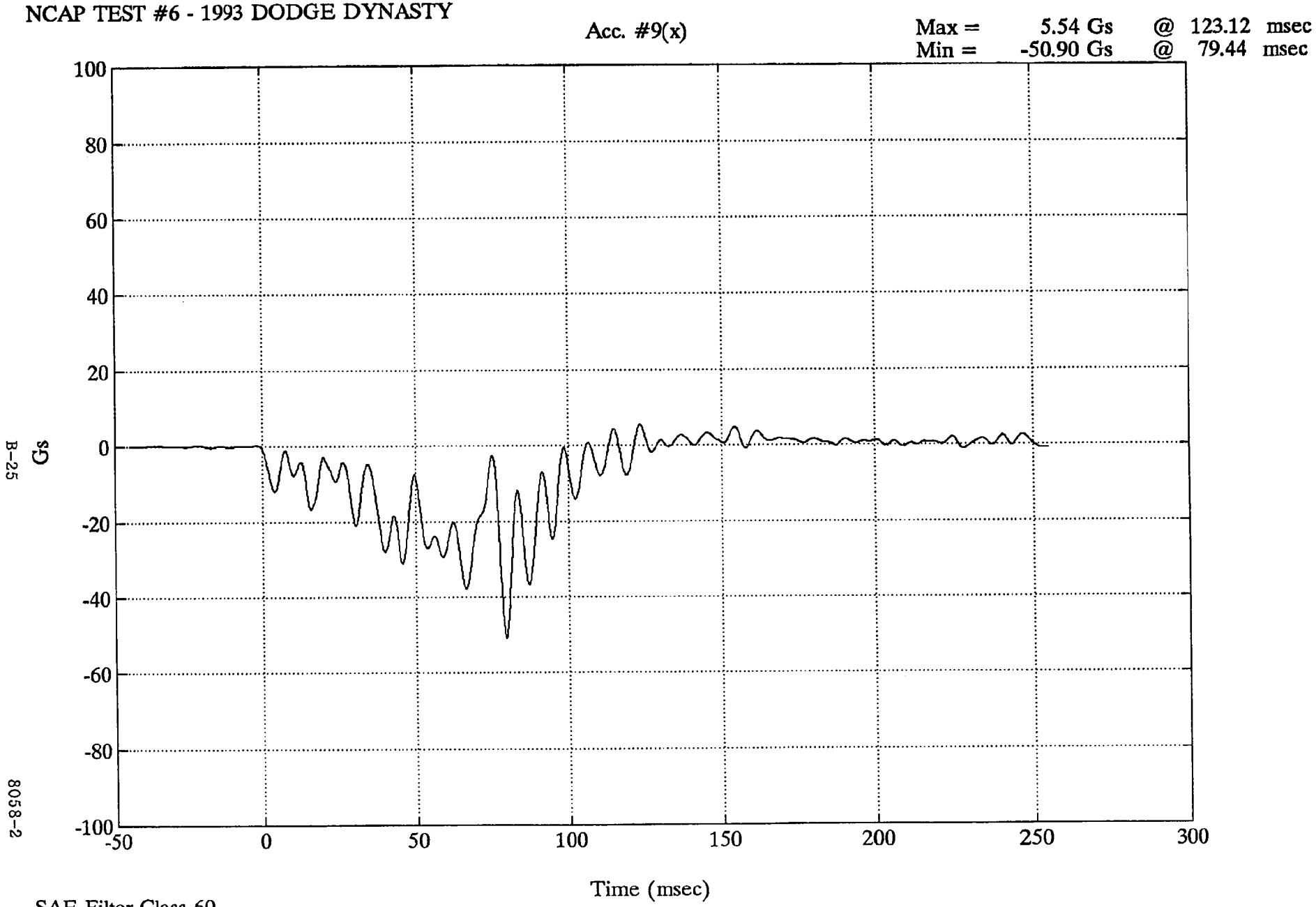
NCAP TEST #6 - 1993 DODGE DYNASTY

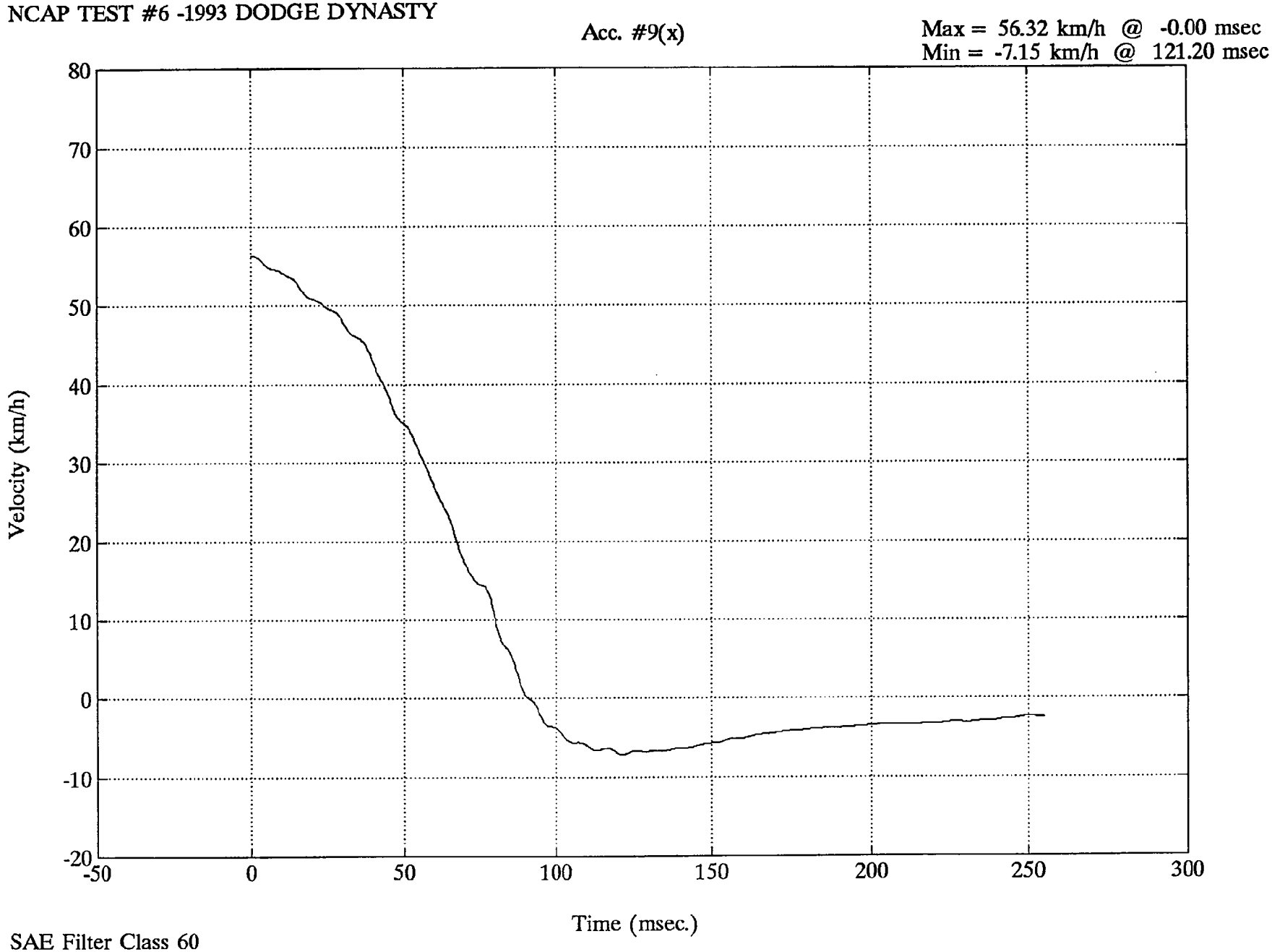


SAE Filter Class 60

B-25

8058-2

NCAP TEST #6 -1993 DODGE DYNASTY

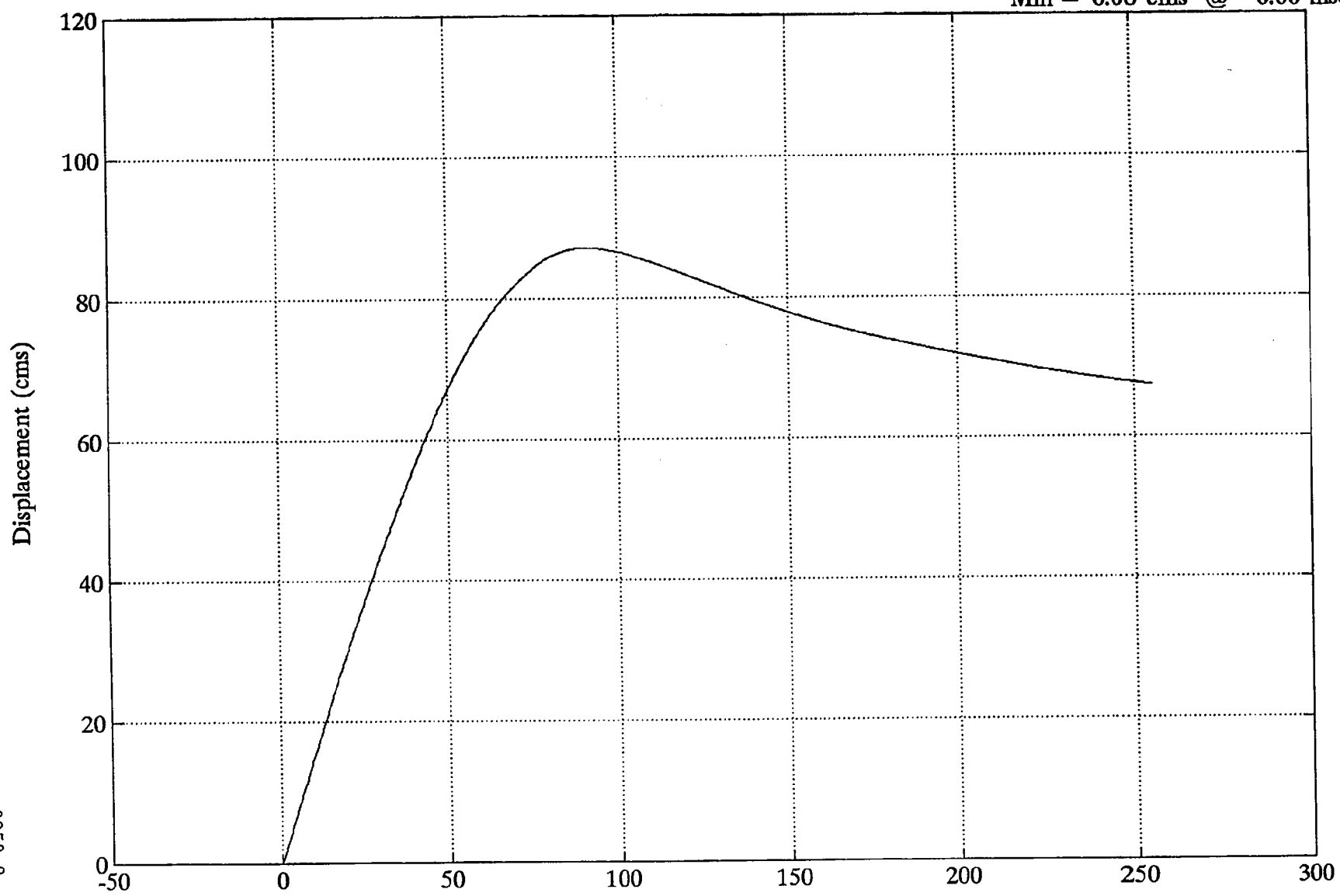


SAE Filter Class 60

NCAP TEST #6 -1993 DODGE DYNASTY

Acc. #9(x)

Max = 87.15 cms @ 91.44 msec
Min = 0.00 cms @ -0.00 msec



SAE Filter Class 60

8058-2

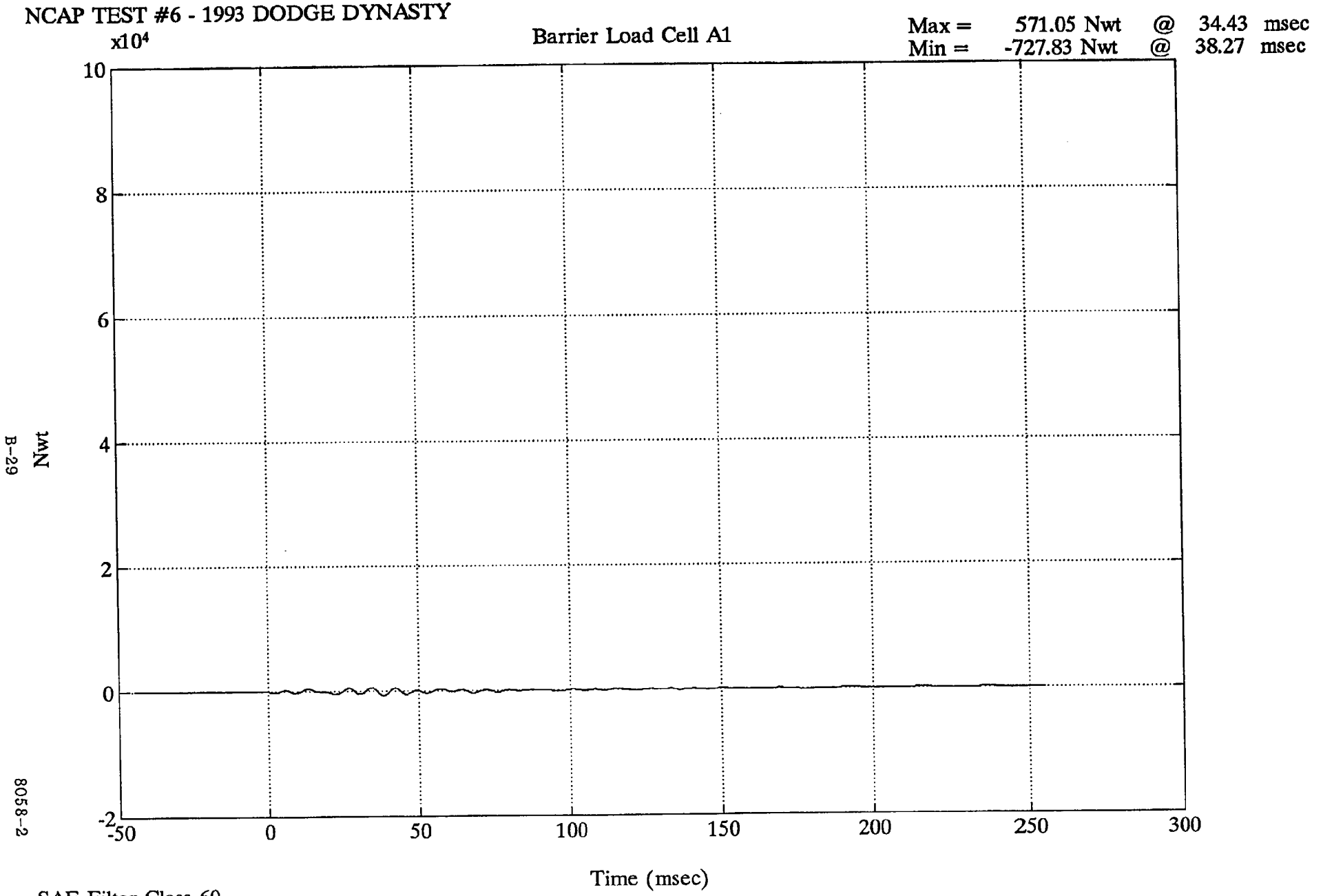
TEST NO. MP0301

LOAD CELL BARRIER DATA

FILTER CHANNEL CLASS

60

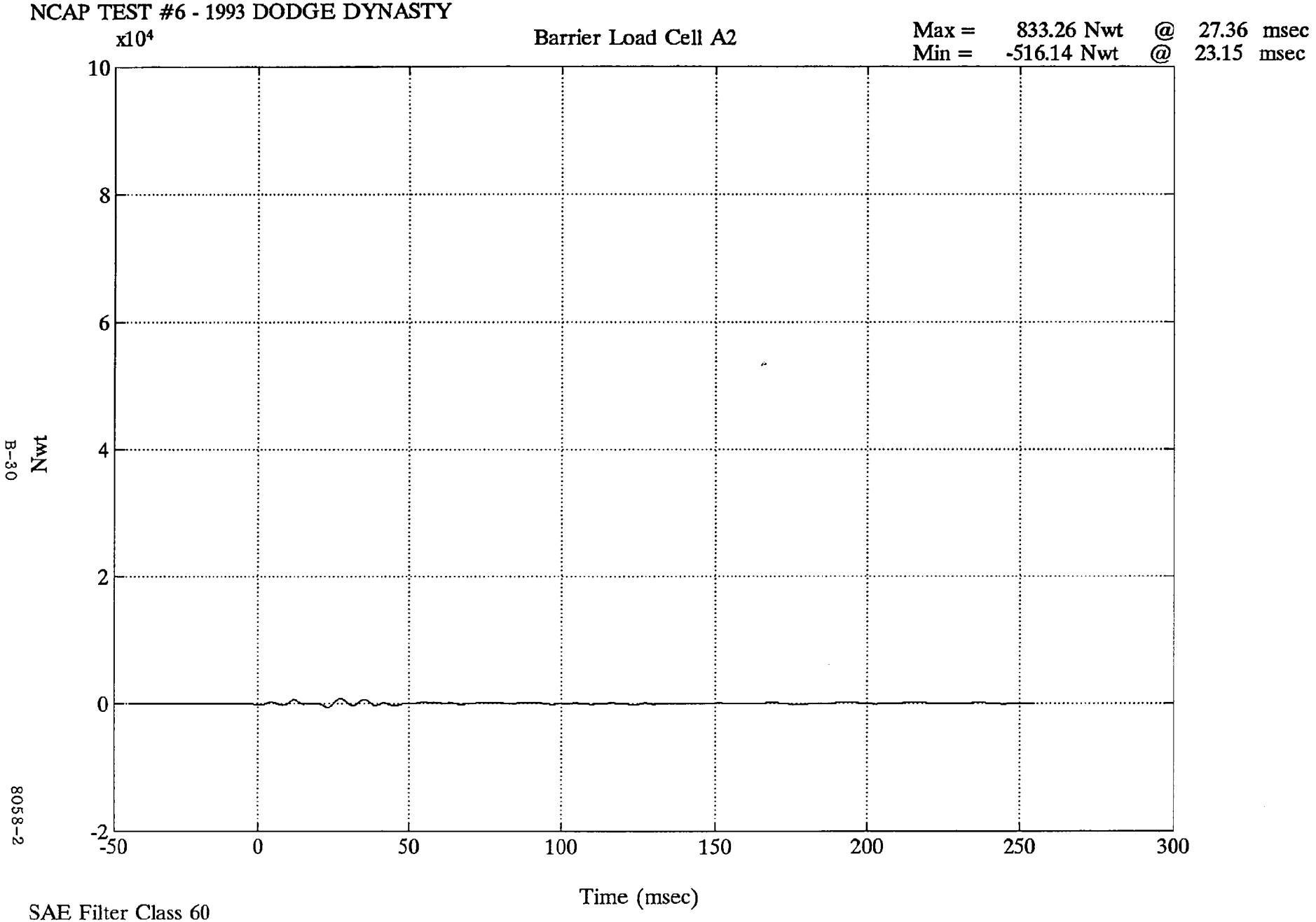
NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY

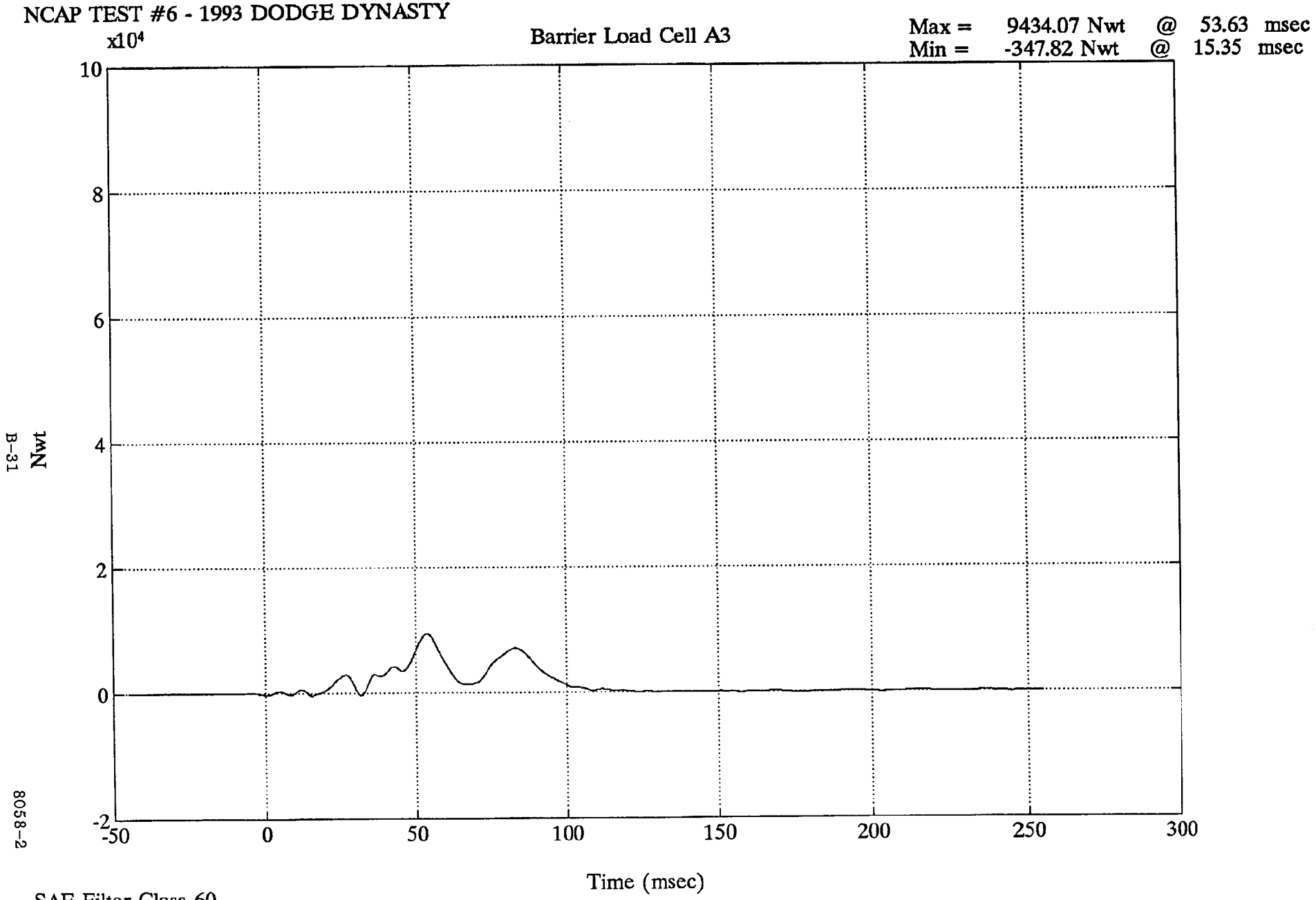


SAE Filter Class 60

B-30

8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY

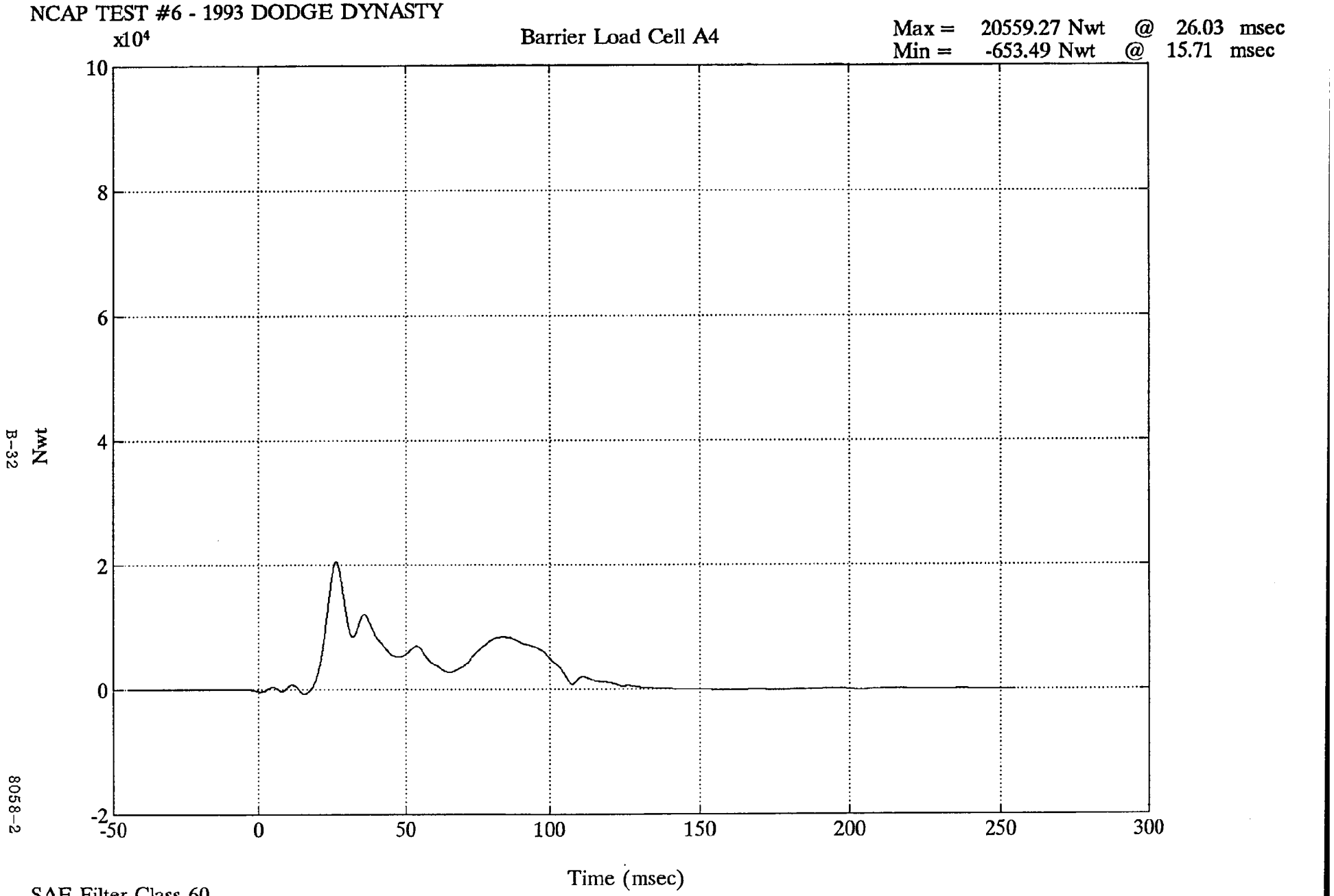


B-31

8058-2

SAE Filter Class 60

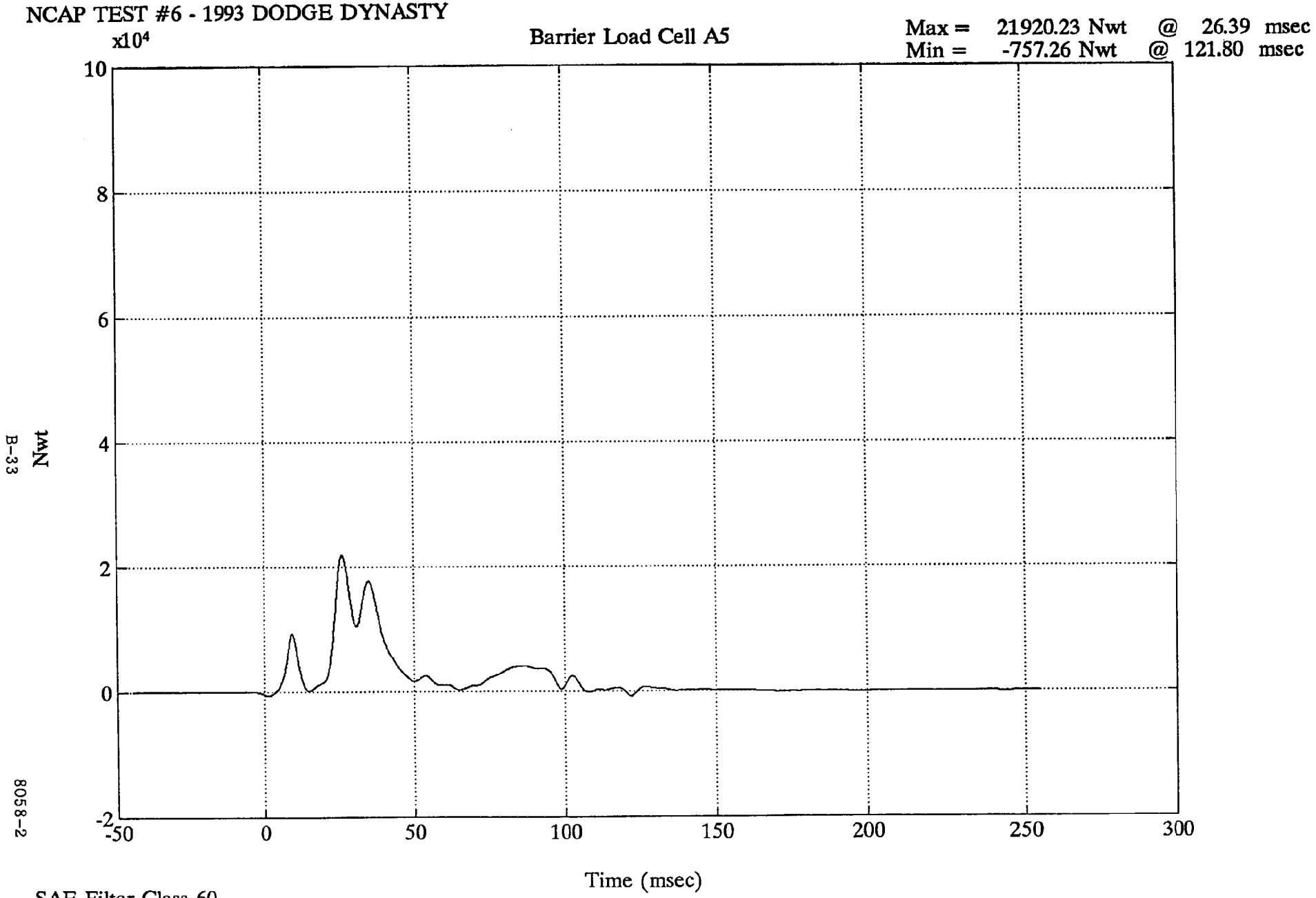
NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

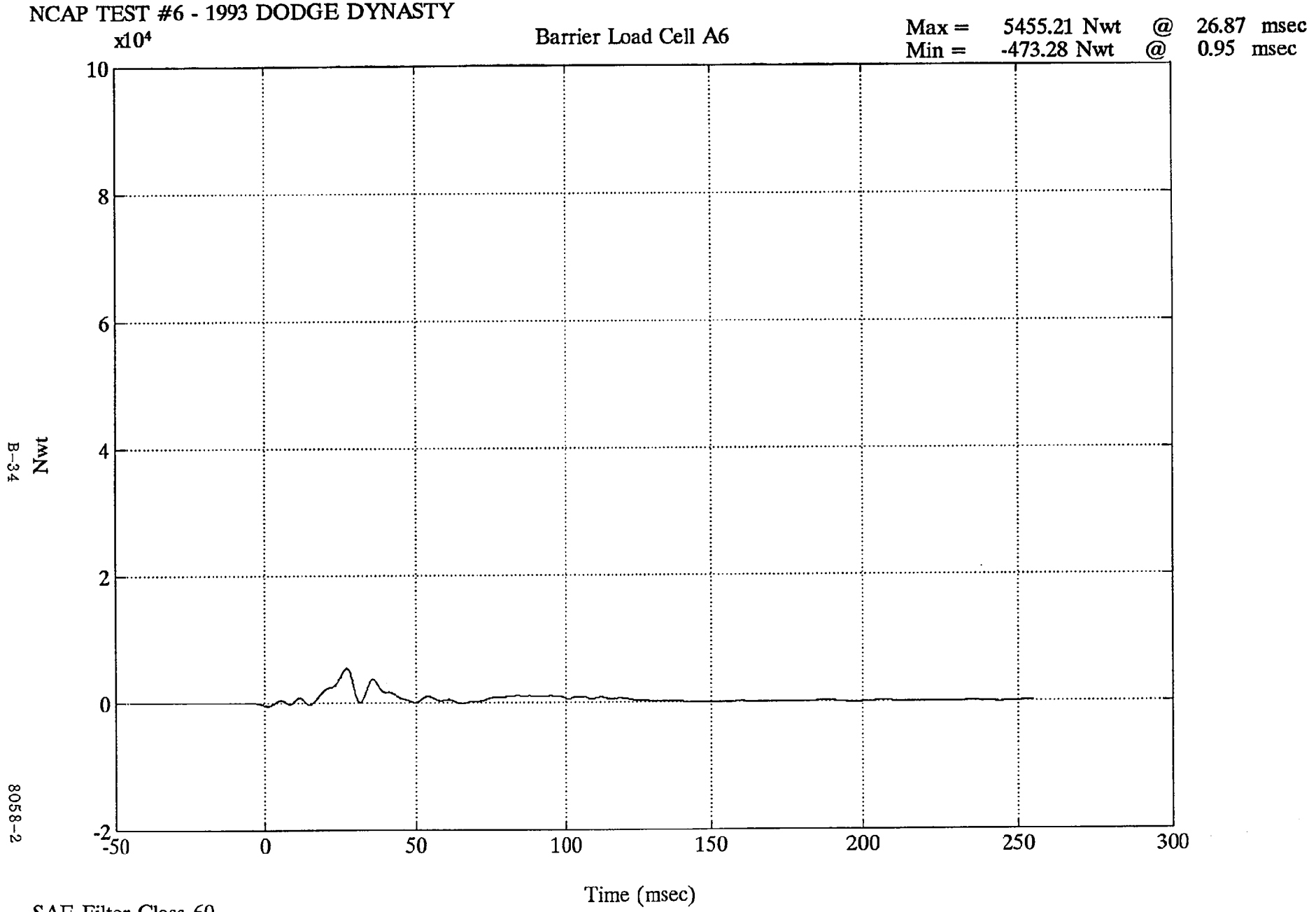
8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY

Barrier Load Cell A7

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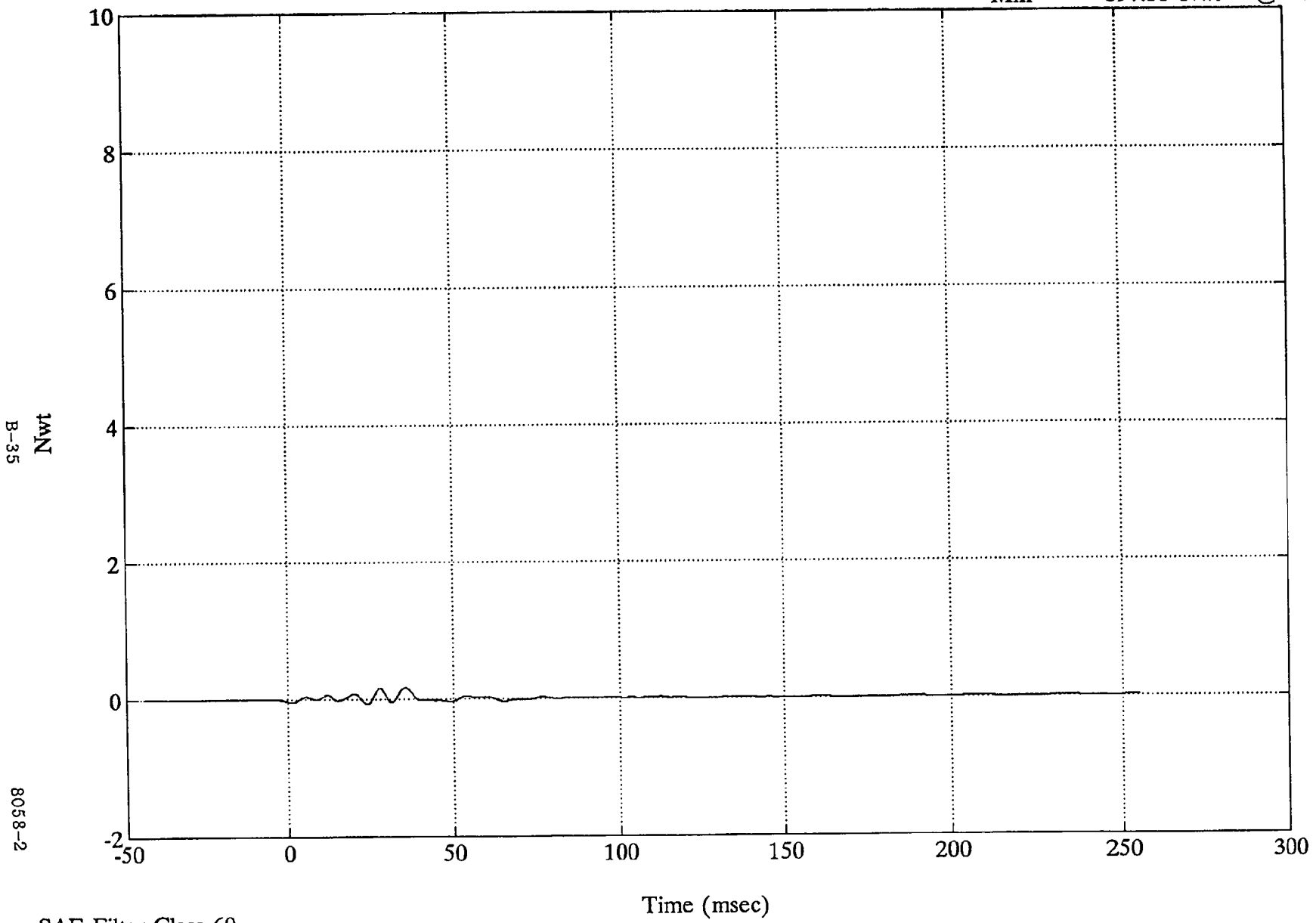
Min = -697.35 Nwt @ 24.00 msec

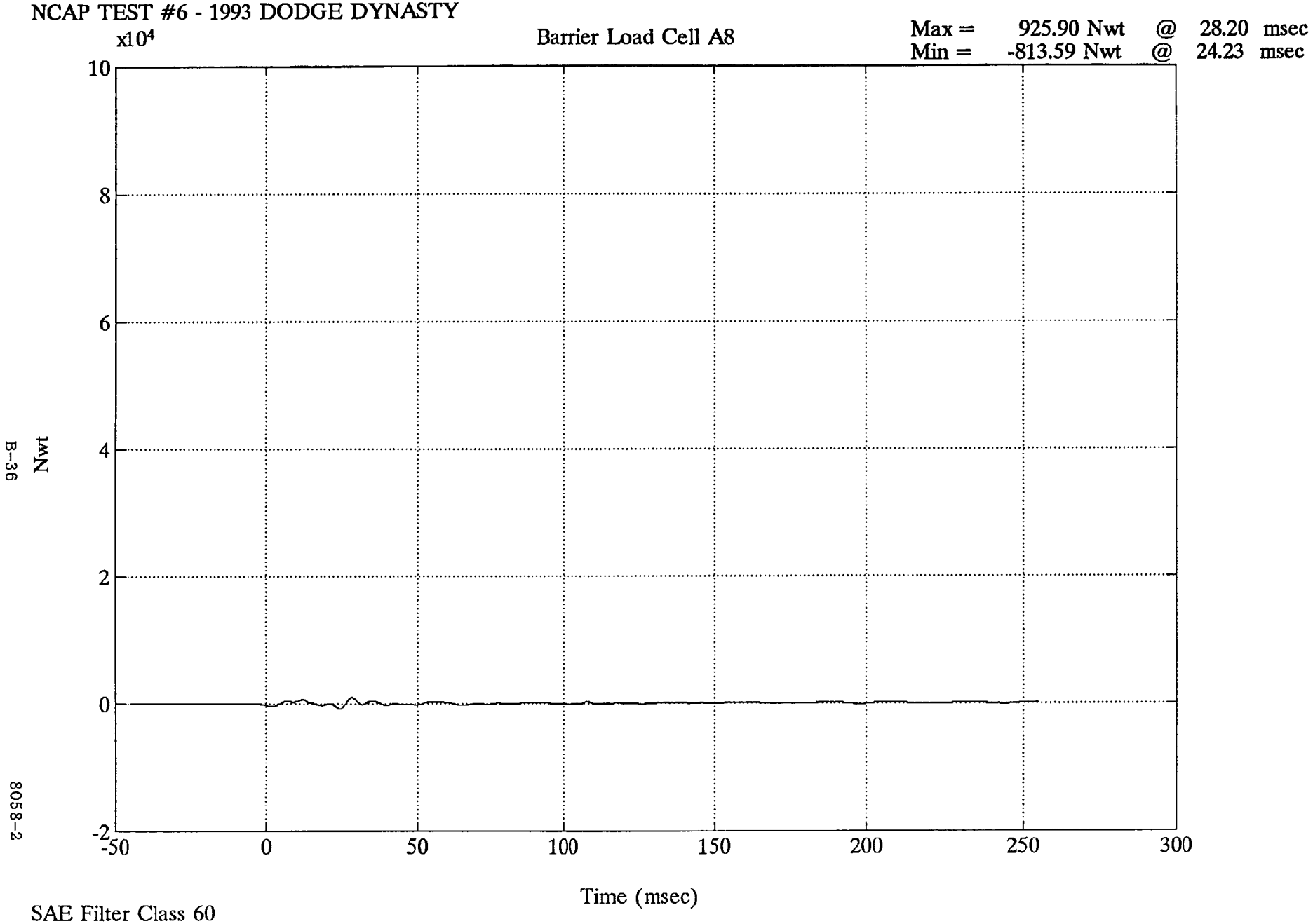


B-35

8058-2

SAE Filter Class 60

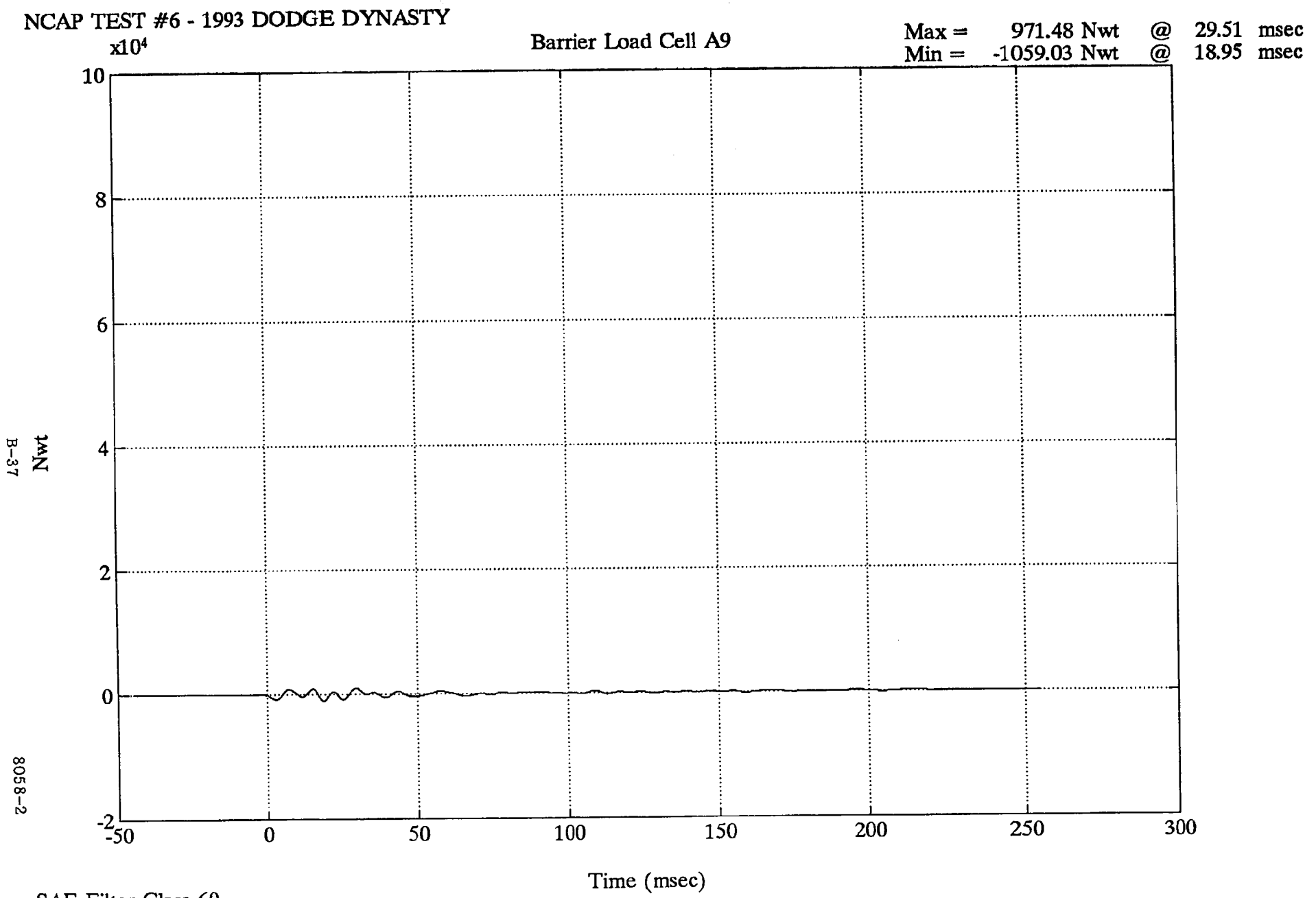
NCAP TEST #6 - 1993 DODGE DYNASTY



B-36

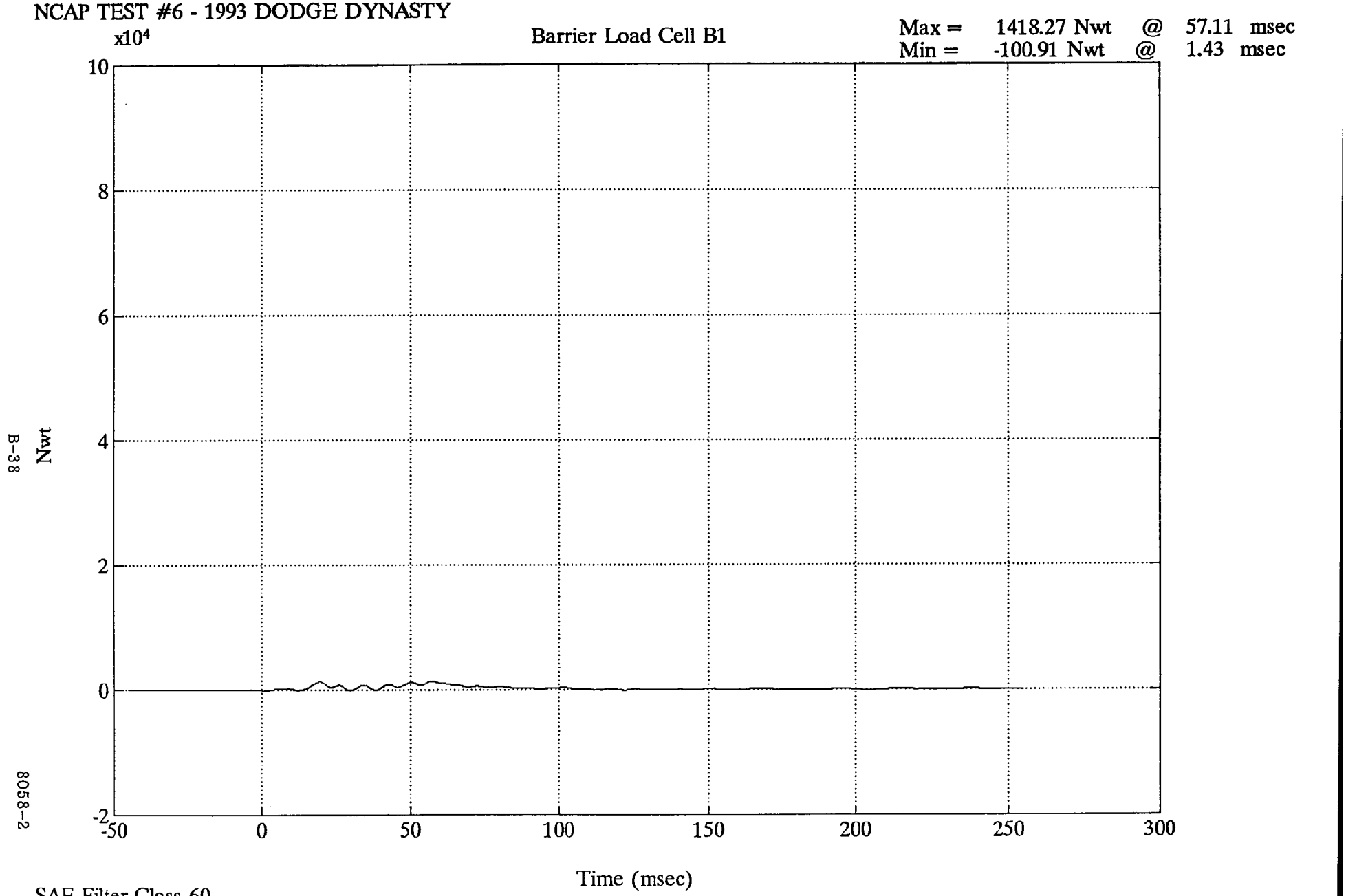
8058-2

SAE Filter Class 60



SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY



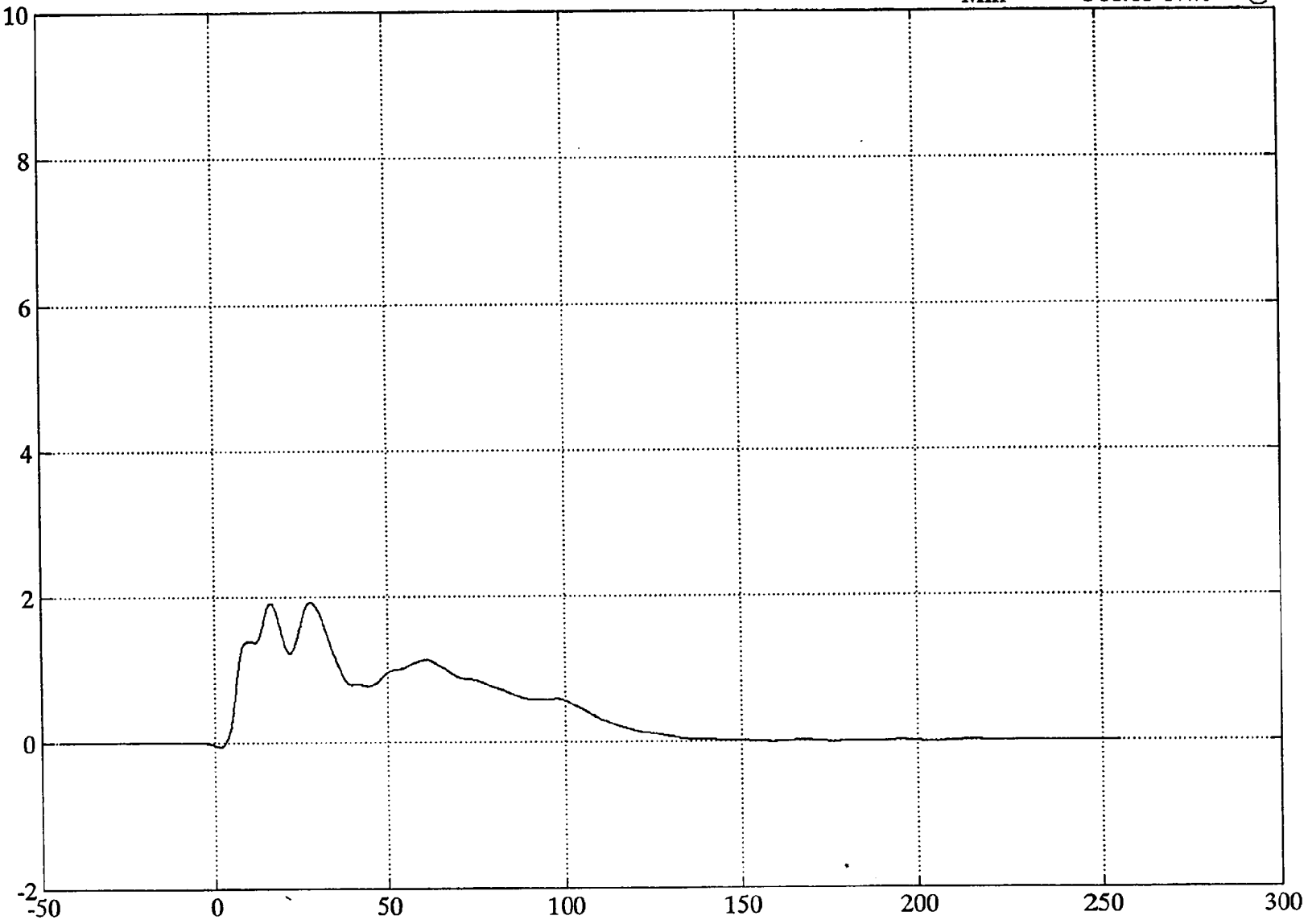
SAE Filter Class 60

8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY

Barrier Load Cell B2

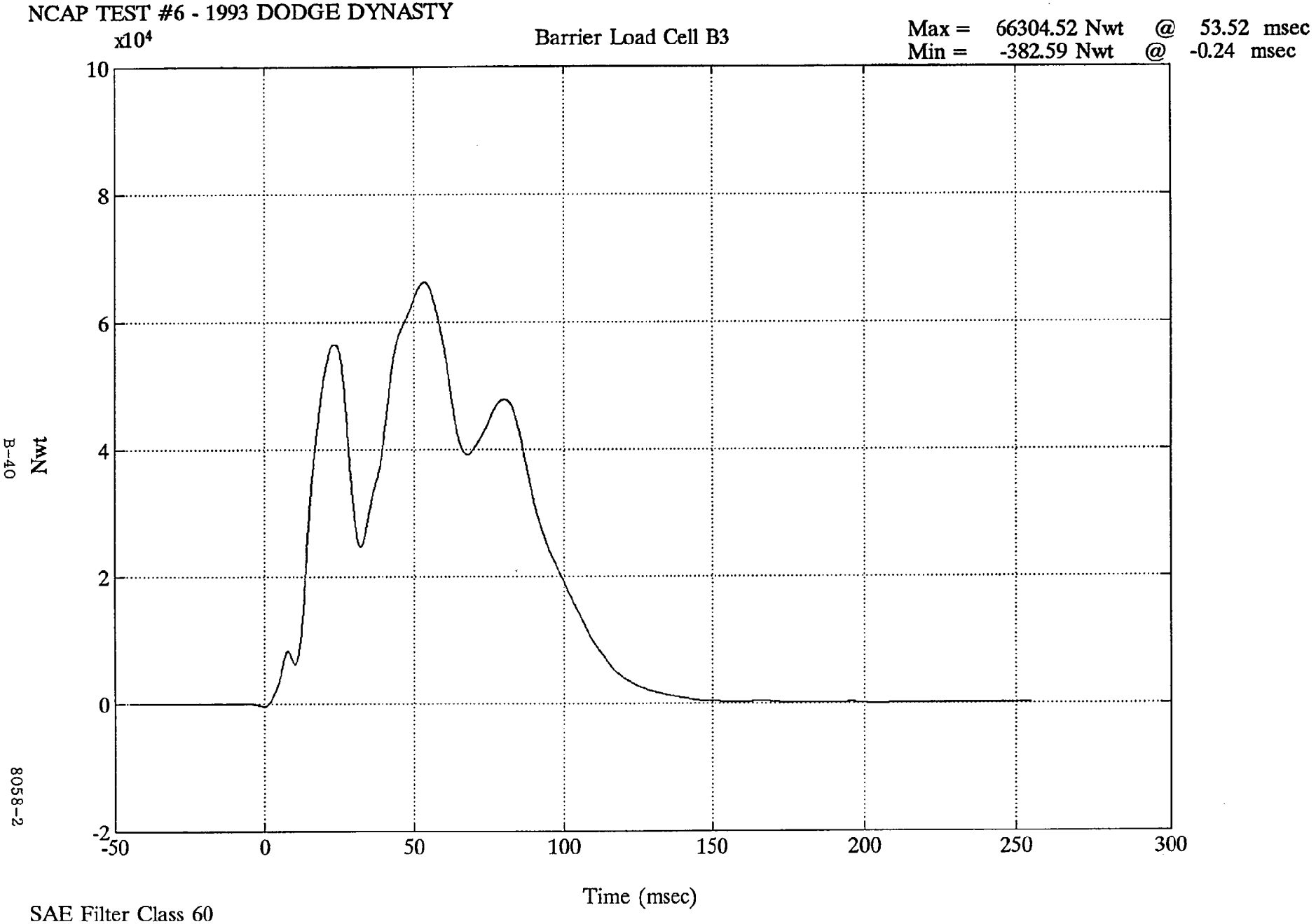
Max = 19270.19 Nwt @ 27.84 msec
Min = -568.65 Nwt @ 1.31 msec



SAE Filter Class 60

8058-2

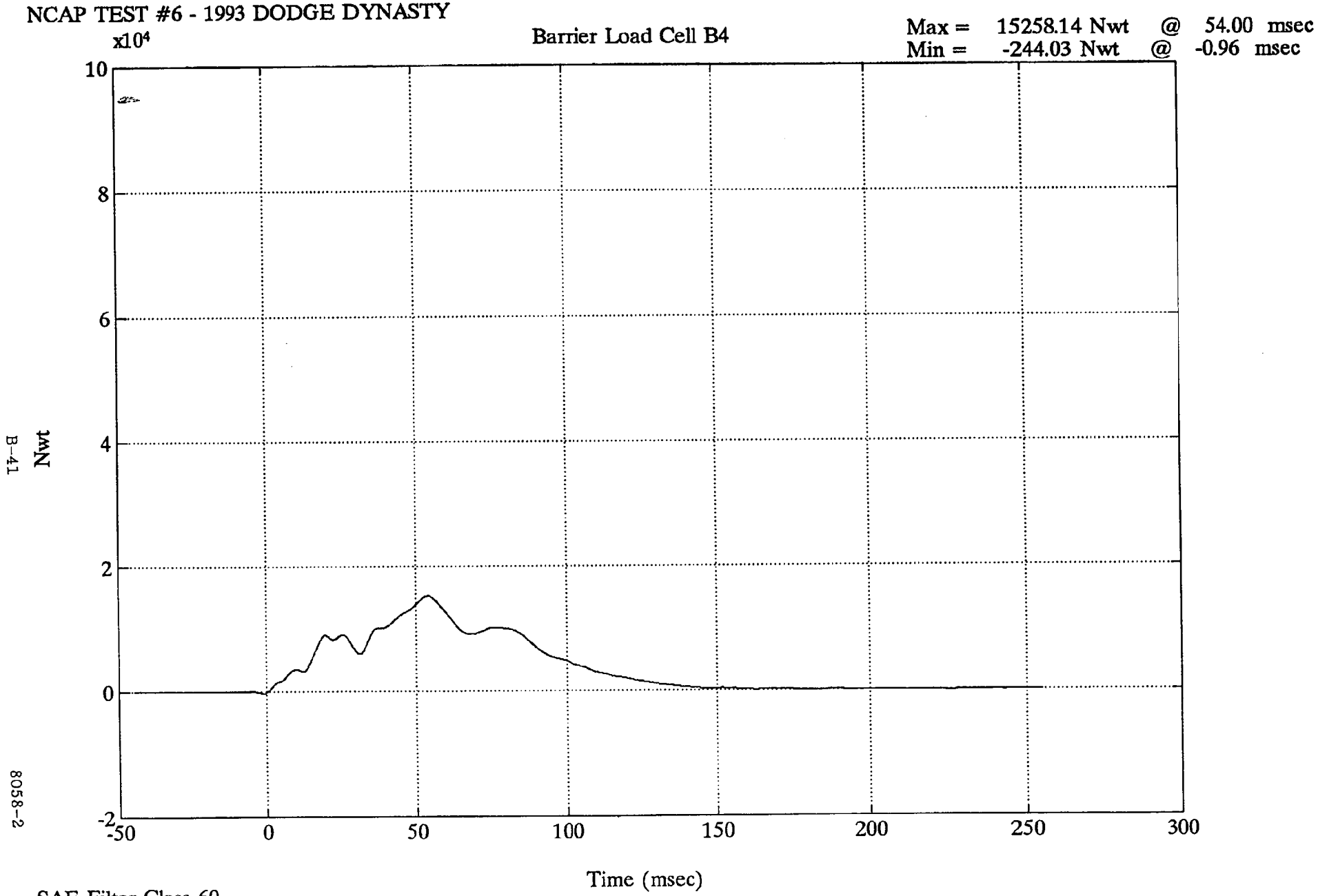
NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY

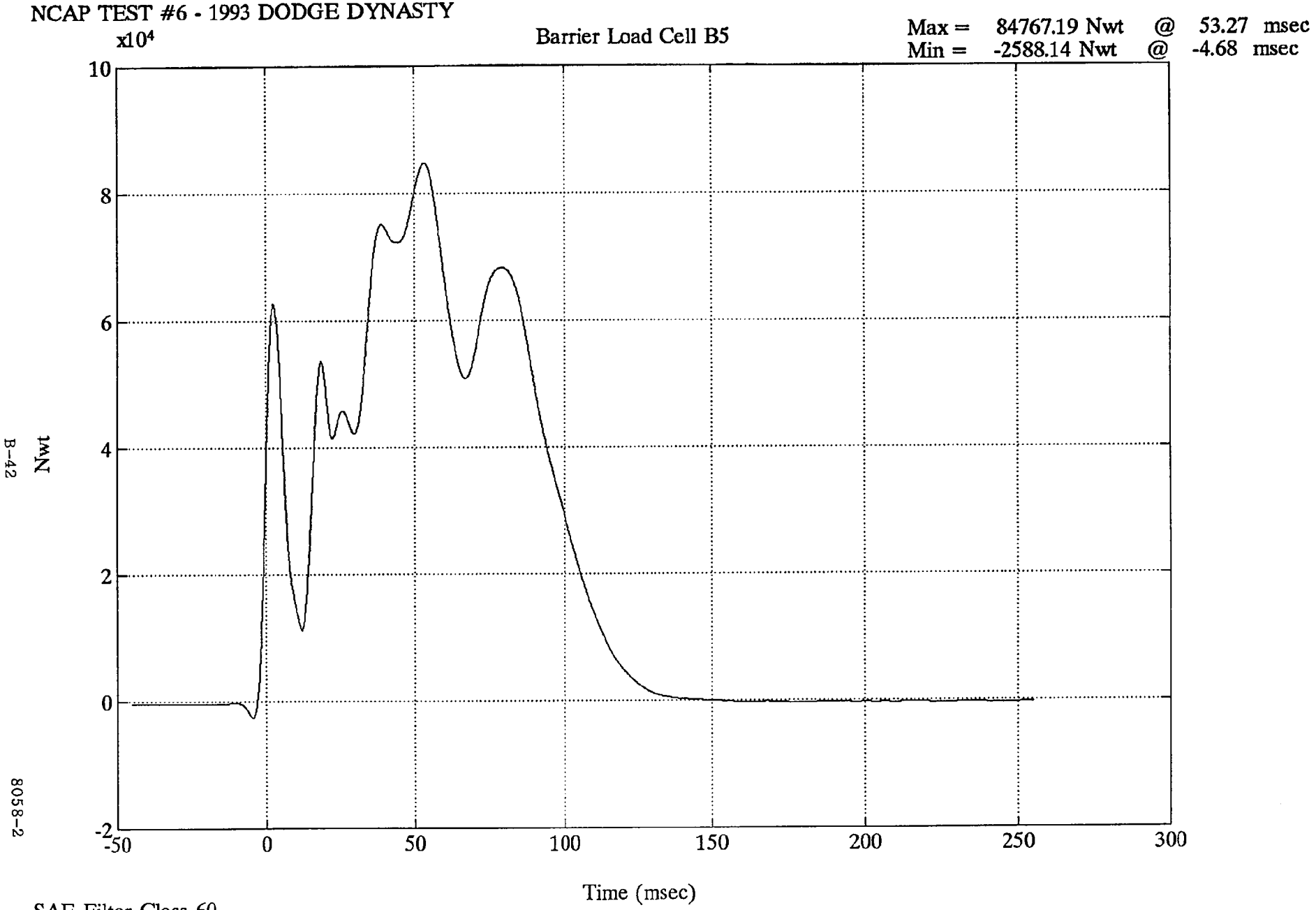


SAE Filter Class 60

B-41

8058-2

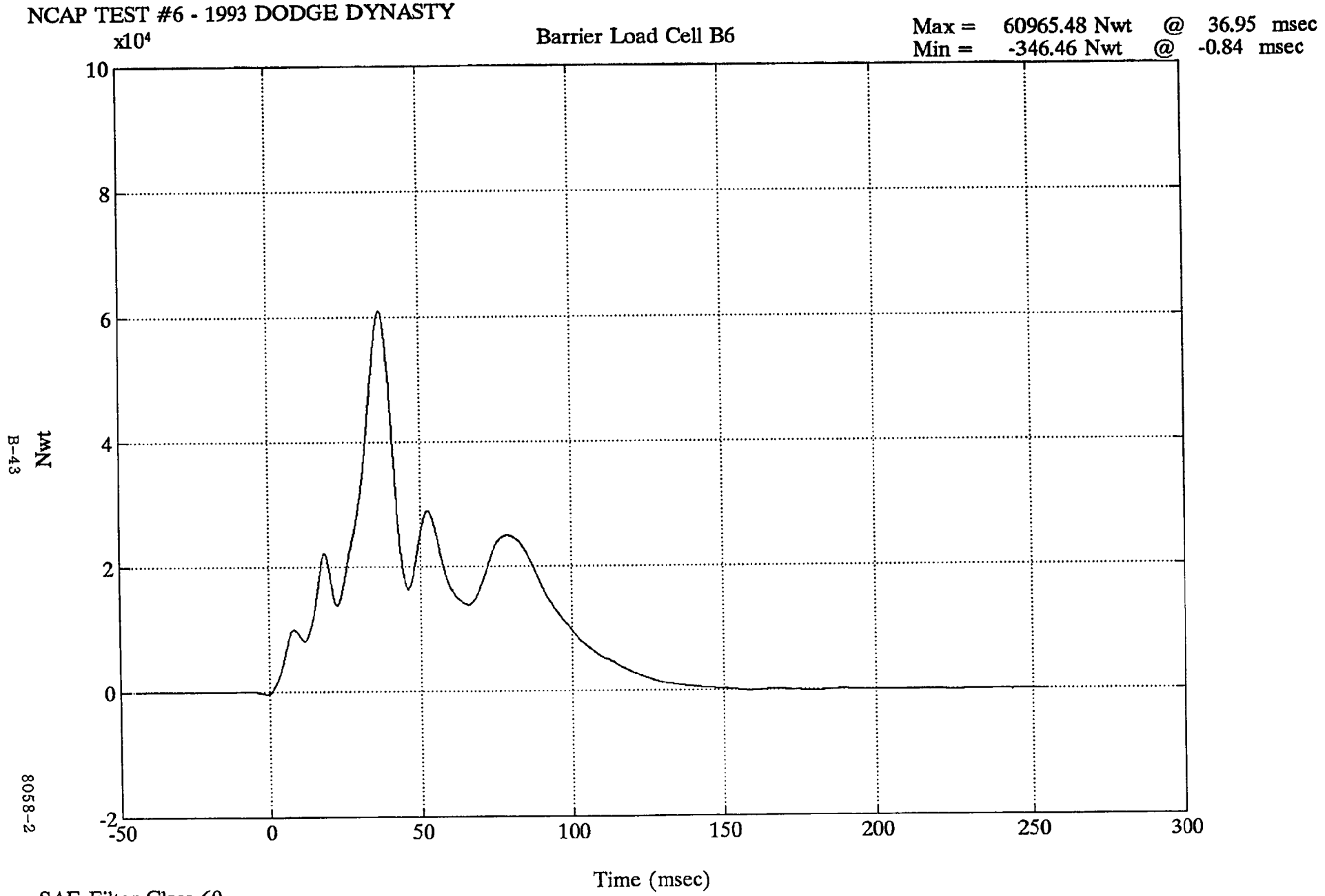
NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

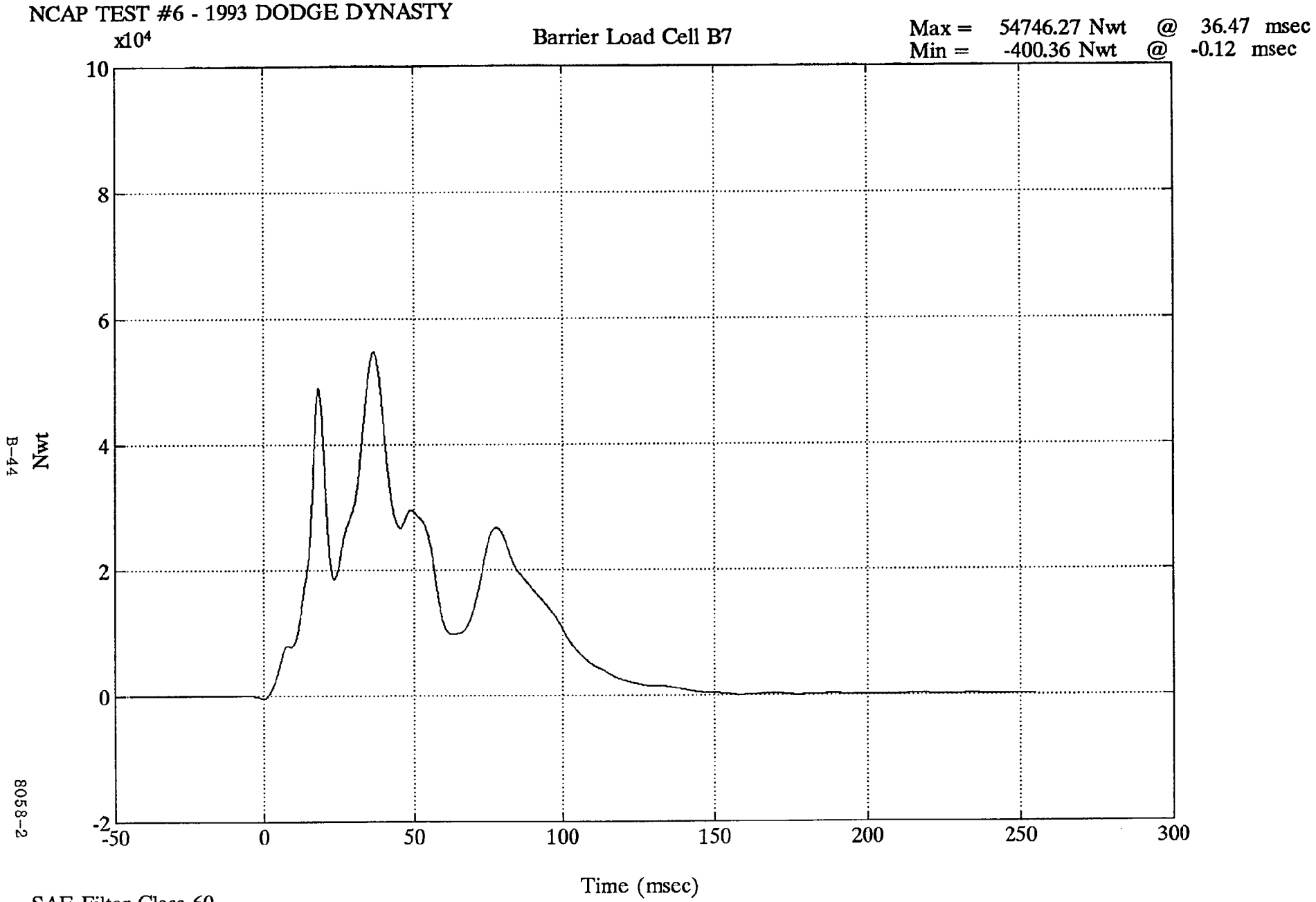
NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

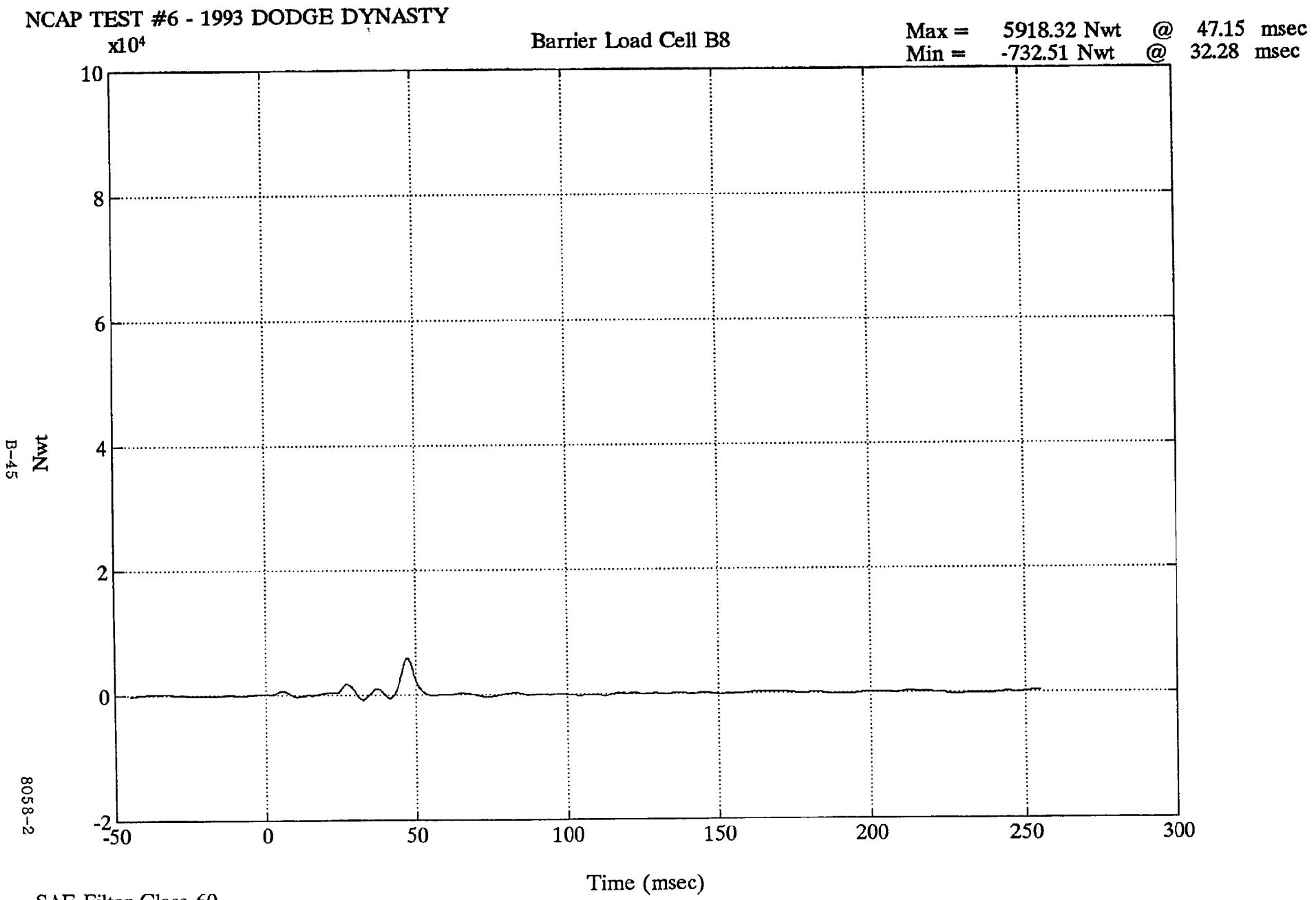
8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY

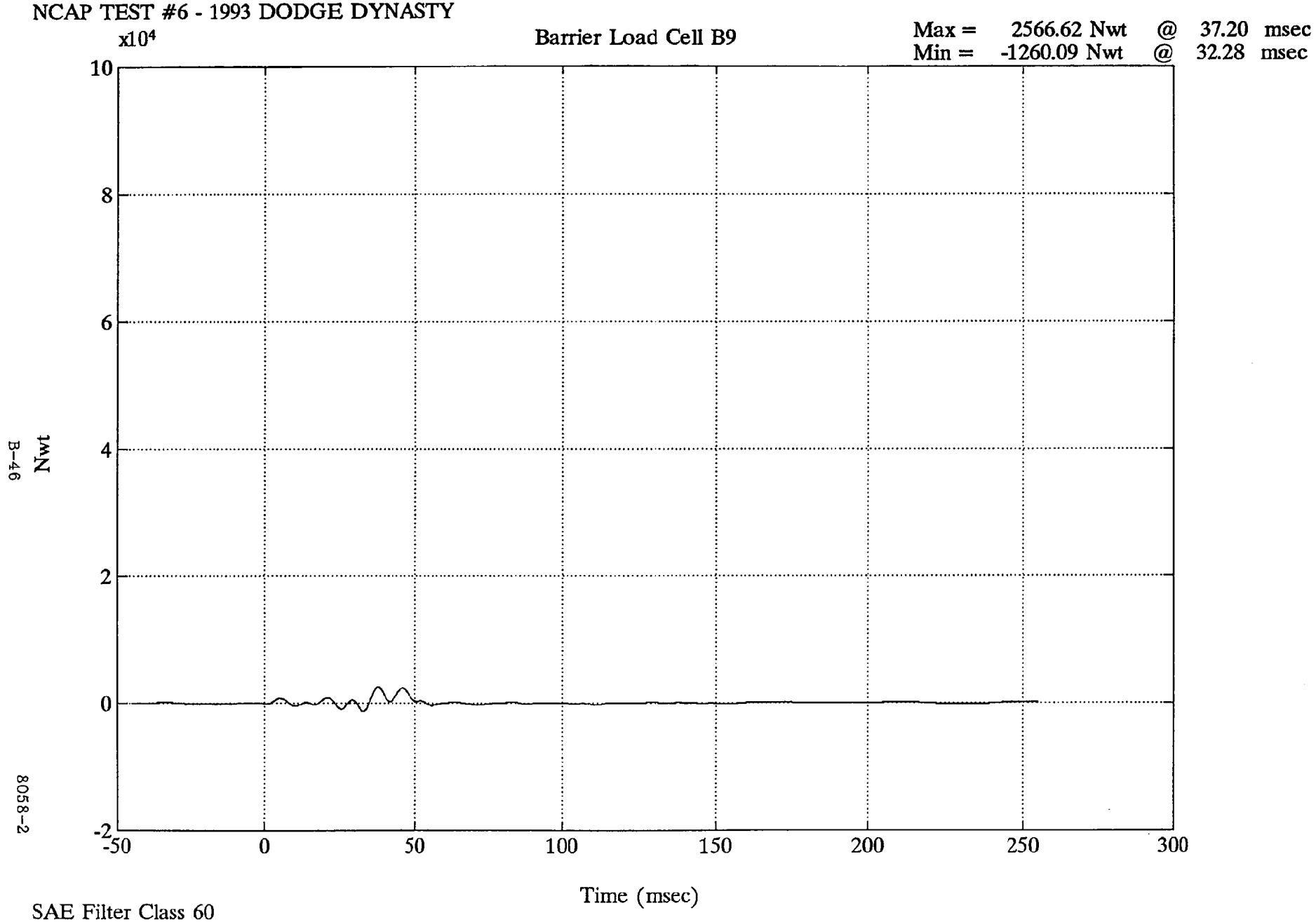


SAE Filter Class 60

8058-2


NCAP TEST #6 - 1993 DODGE DYNASTY
Barrier Load Cell B8
Max = 5918.32 Nwt @ 47.15 msec
Min = -732.51 Nwt @ 32.28 msec
x10^4
10
8
6
4
2
0
-2
Nwt
-50
0
50
100
150
200
250
300
Time (msec)
B-45
8058-2
SAE Filter Class 60

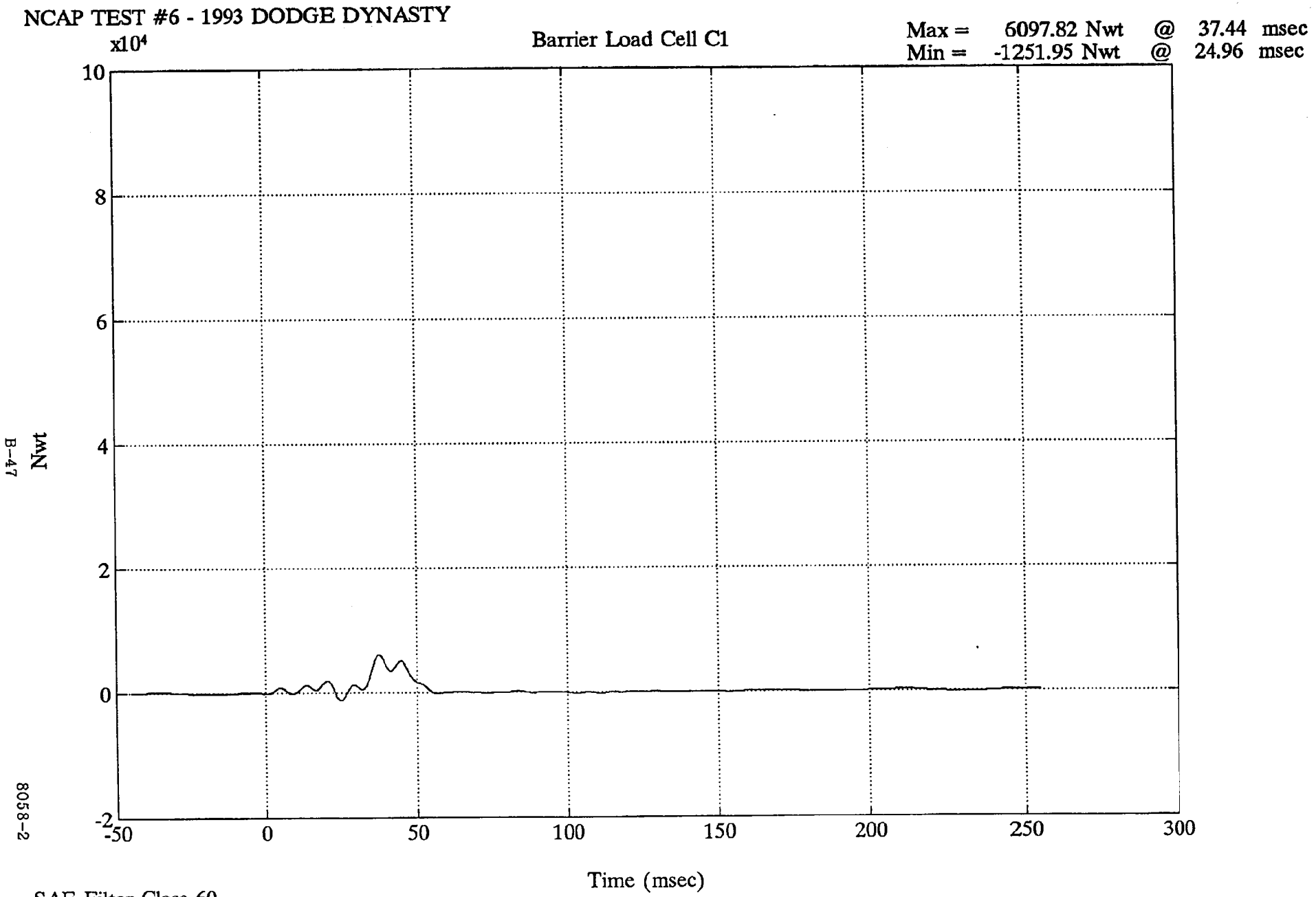
NCAP TEST #6 - 1993 DODGE DYNASTY



B-46

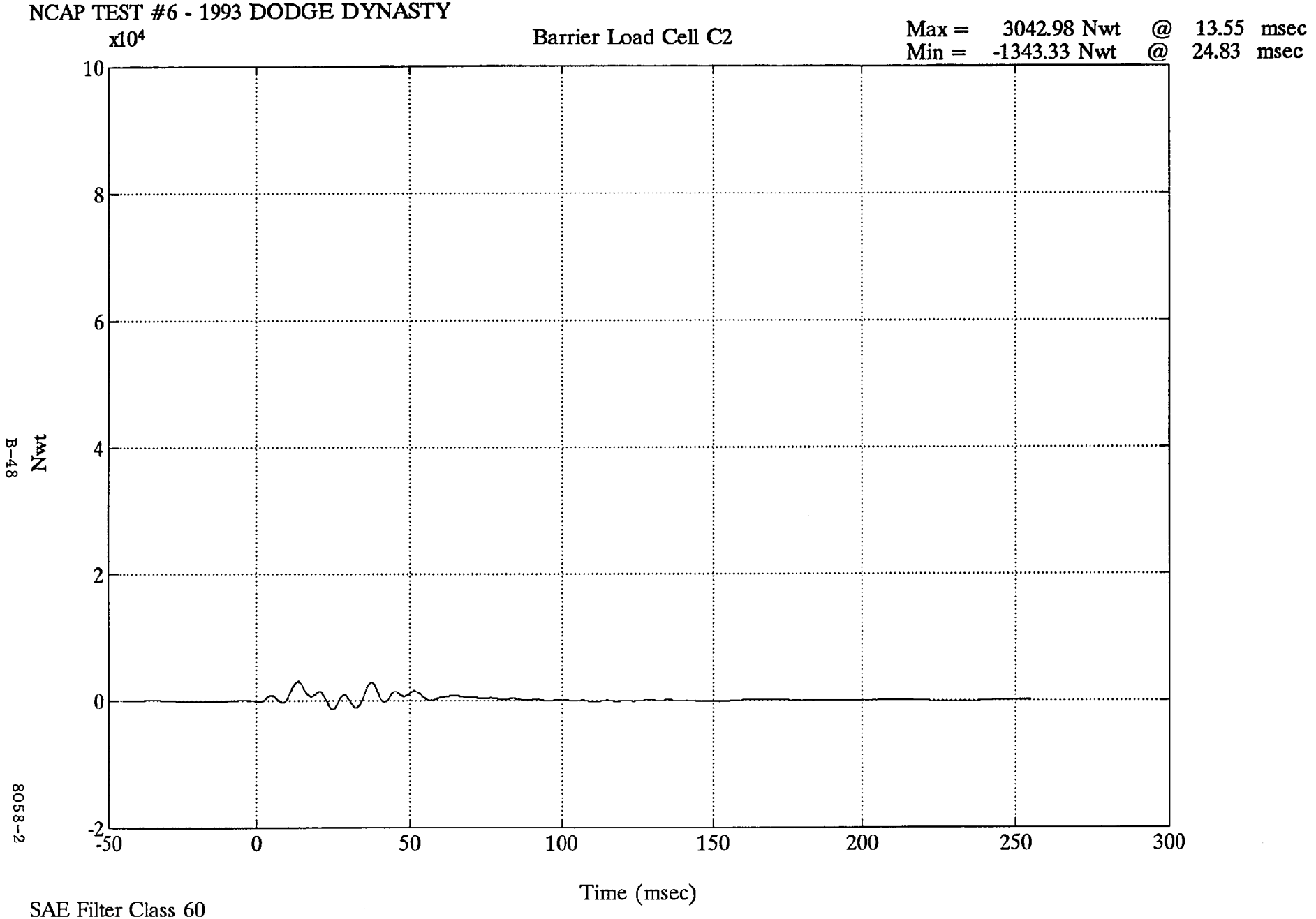
8058-2

SAE Filter Class 60



SAE Filter Class 60

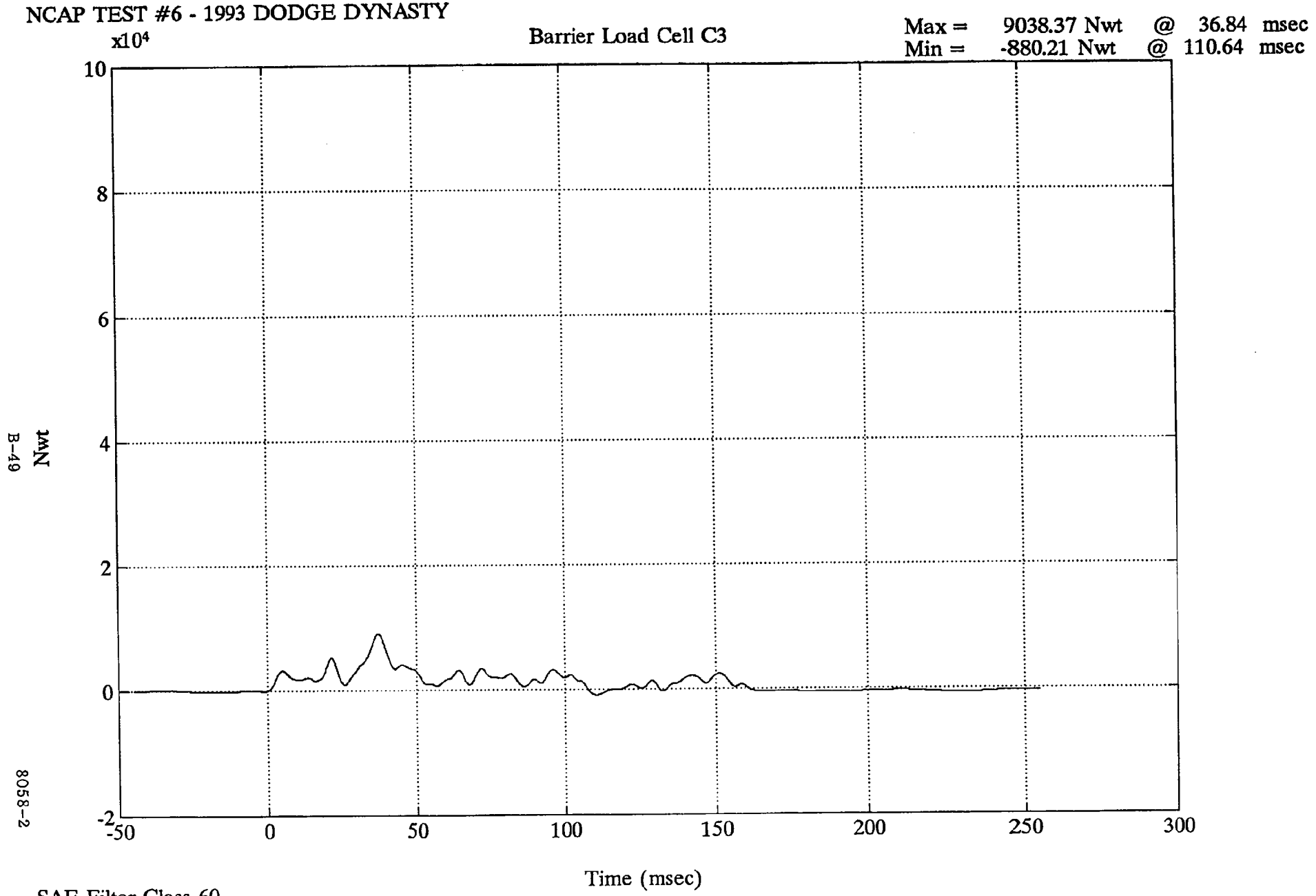
NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

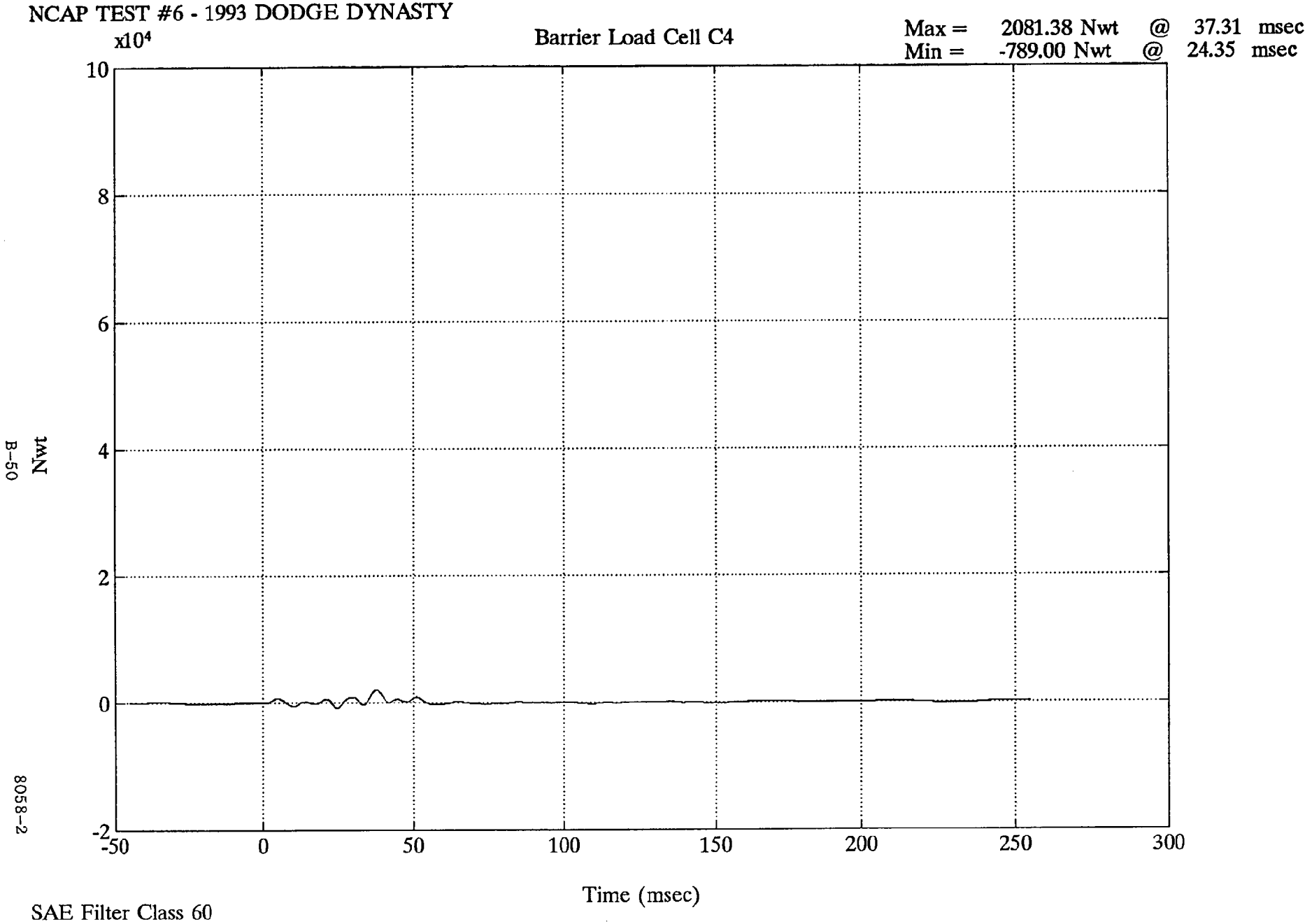
8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY

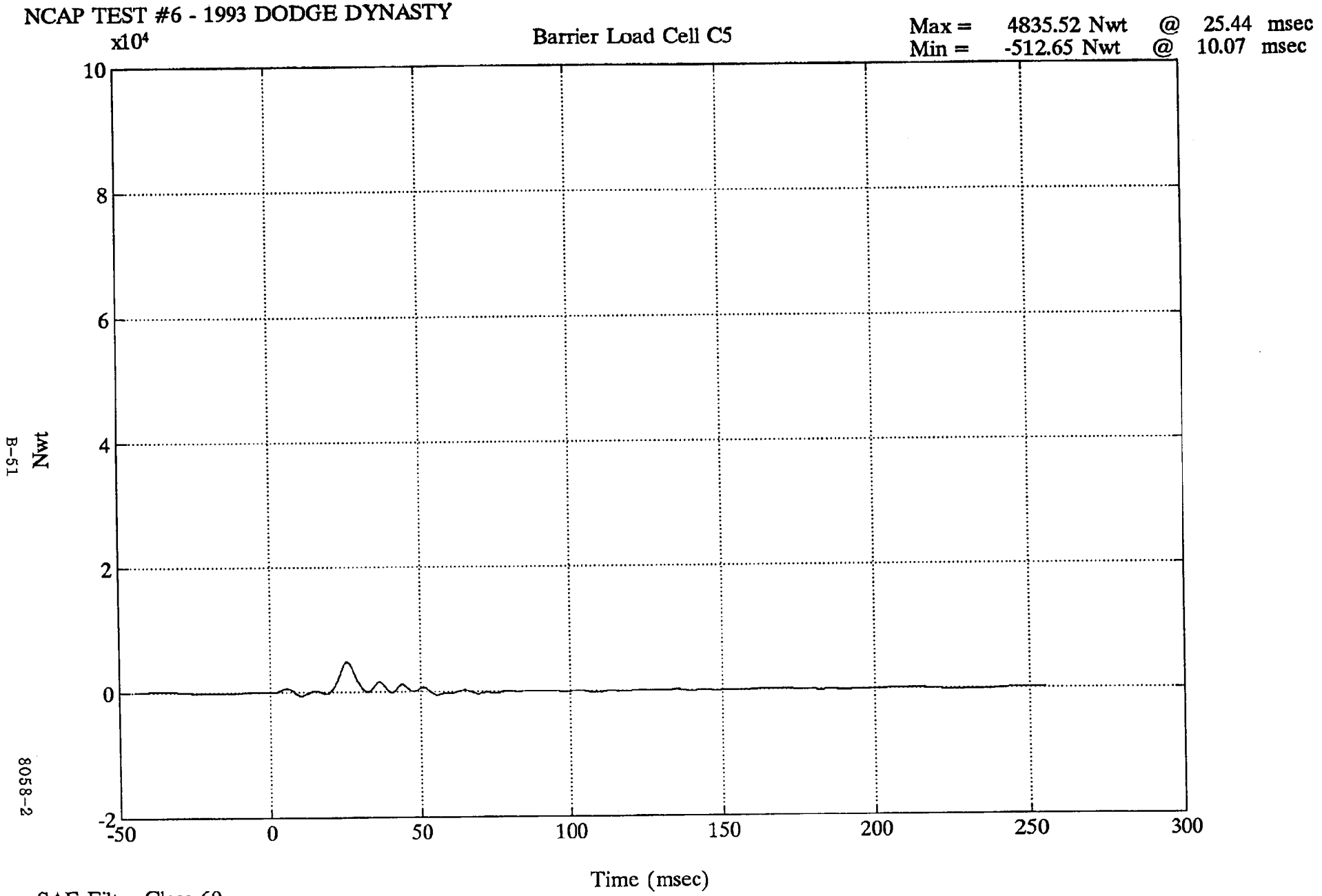


B-50

8058-2

SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY

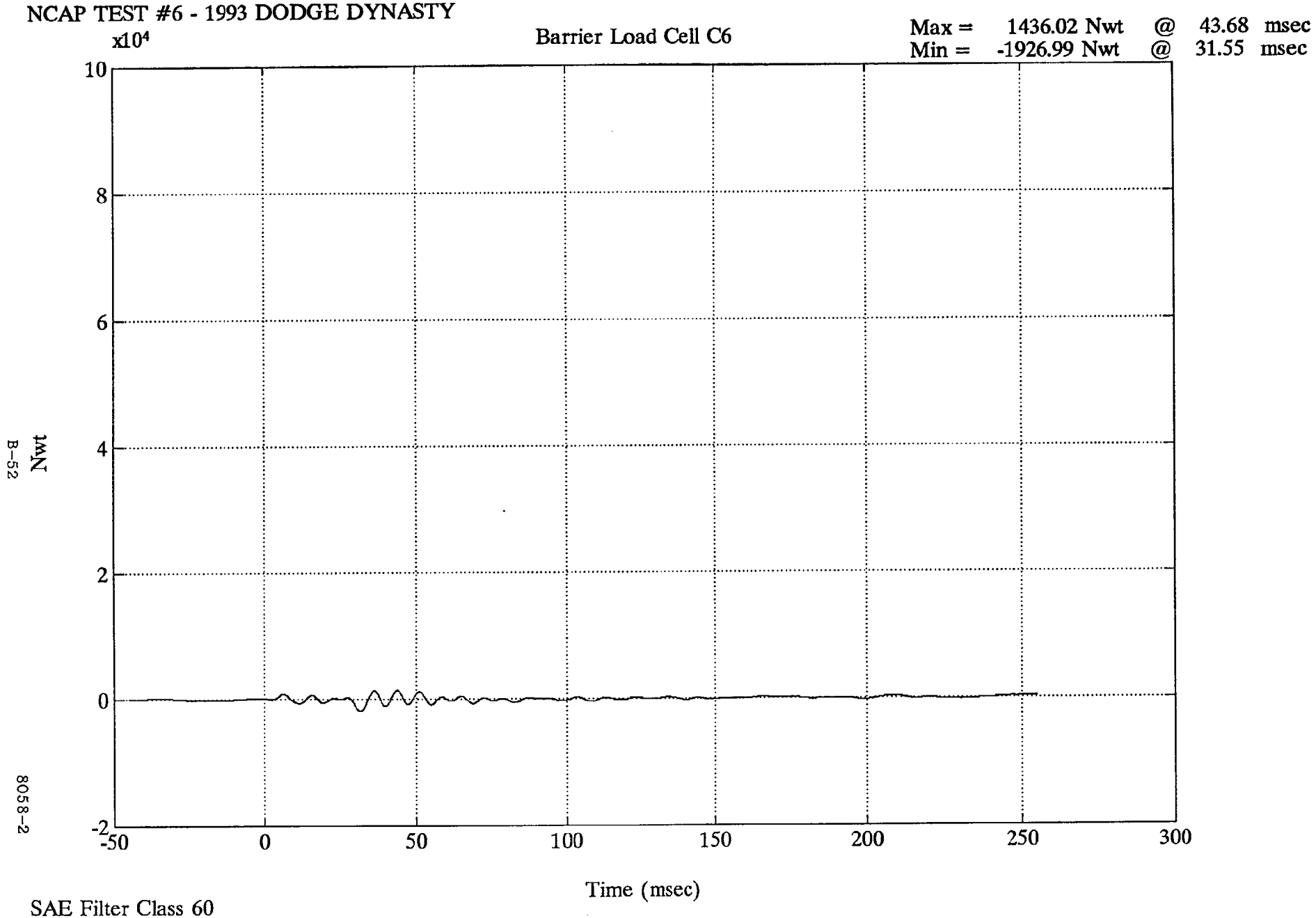


B-51

8058-2

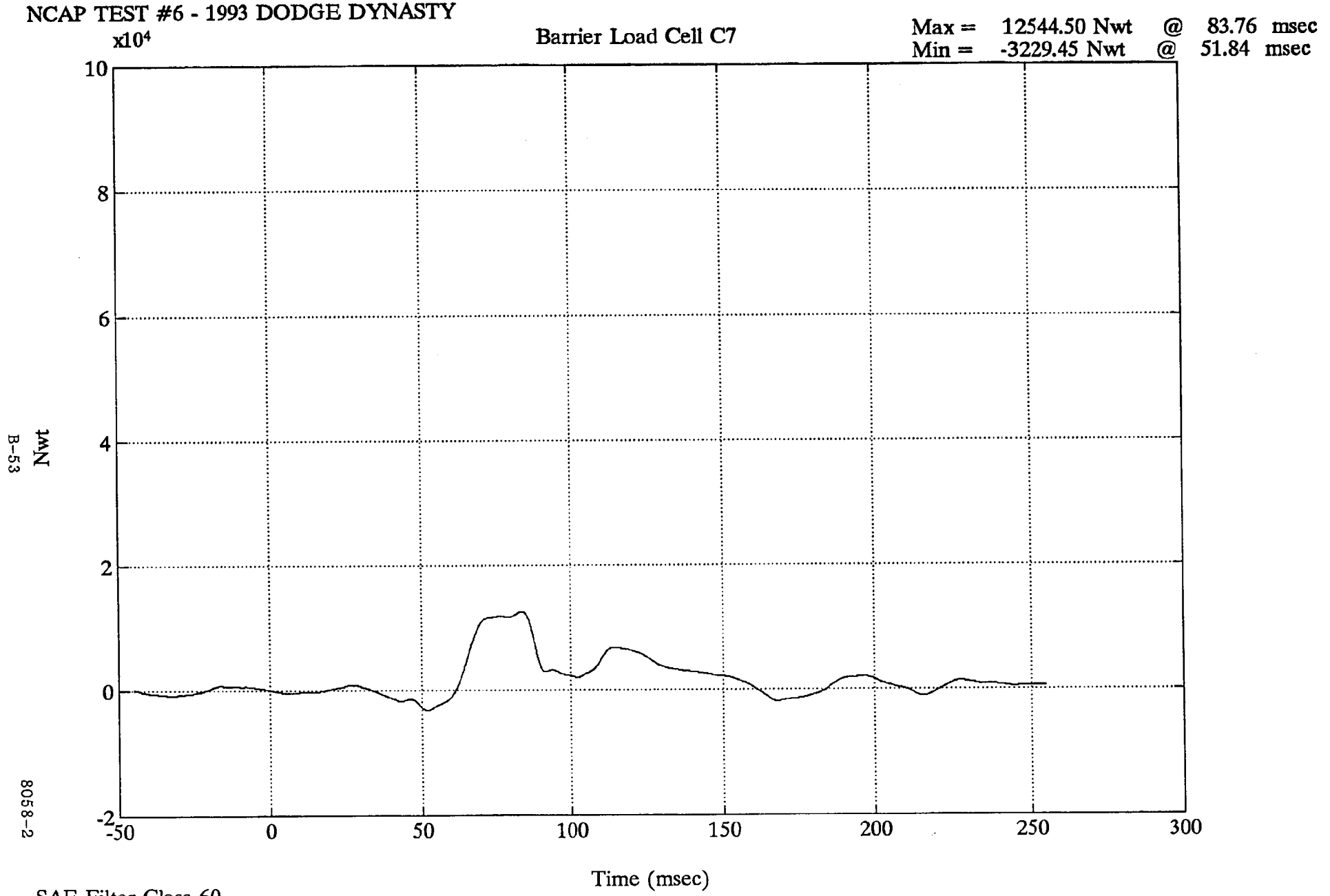
SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY

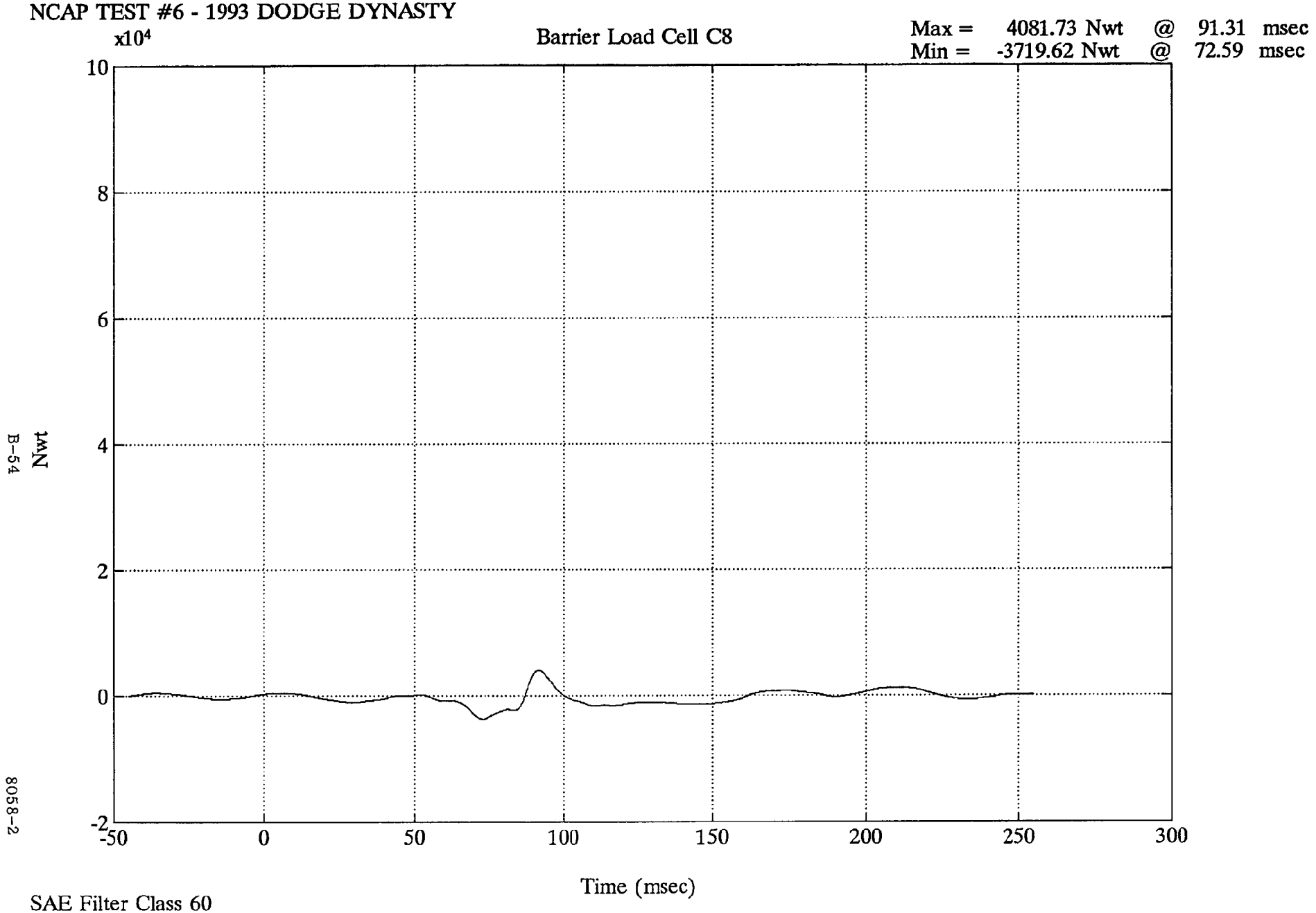


B-53

8058-2

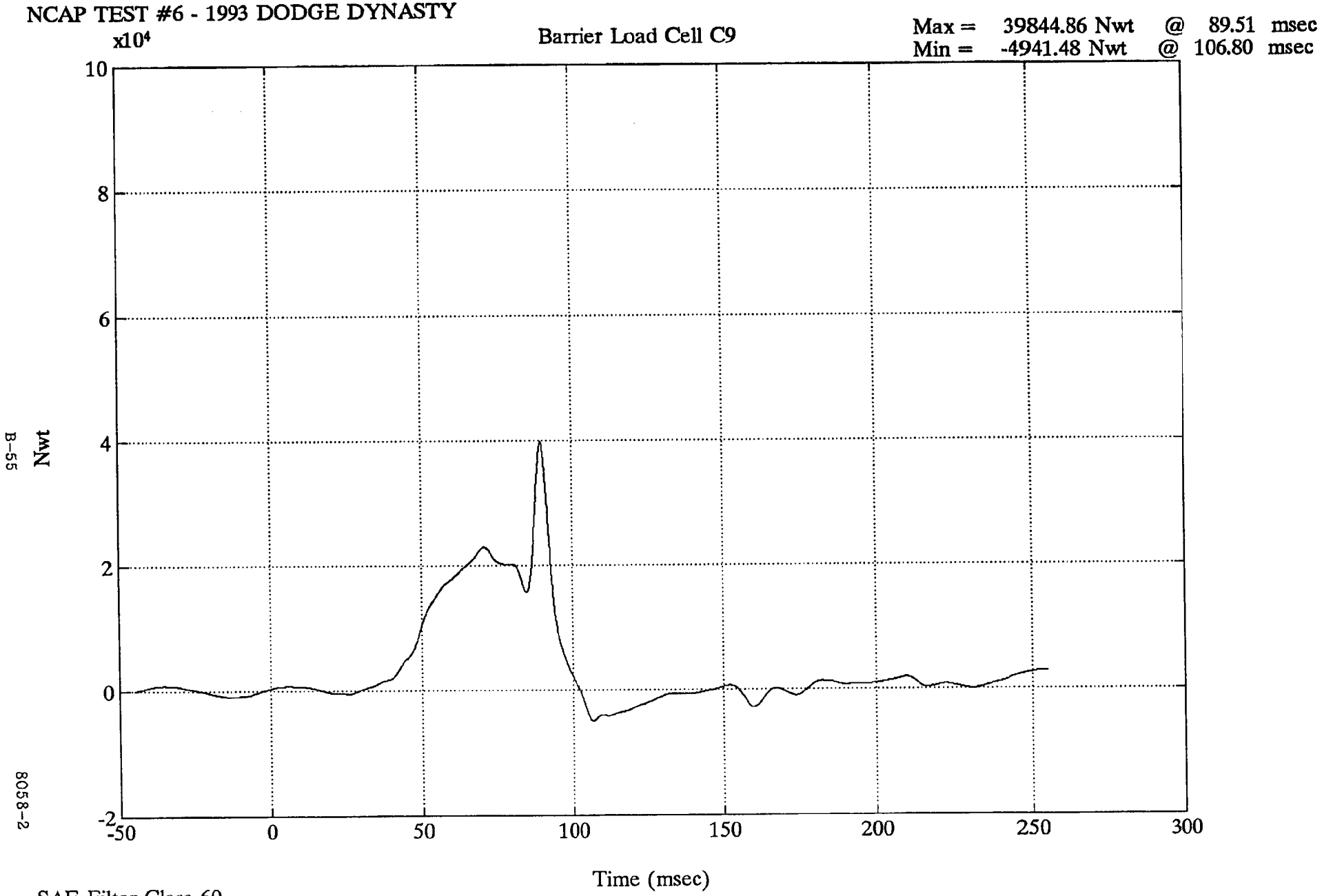
SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

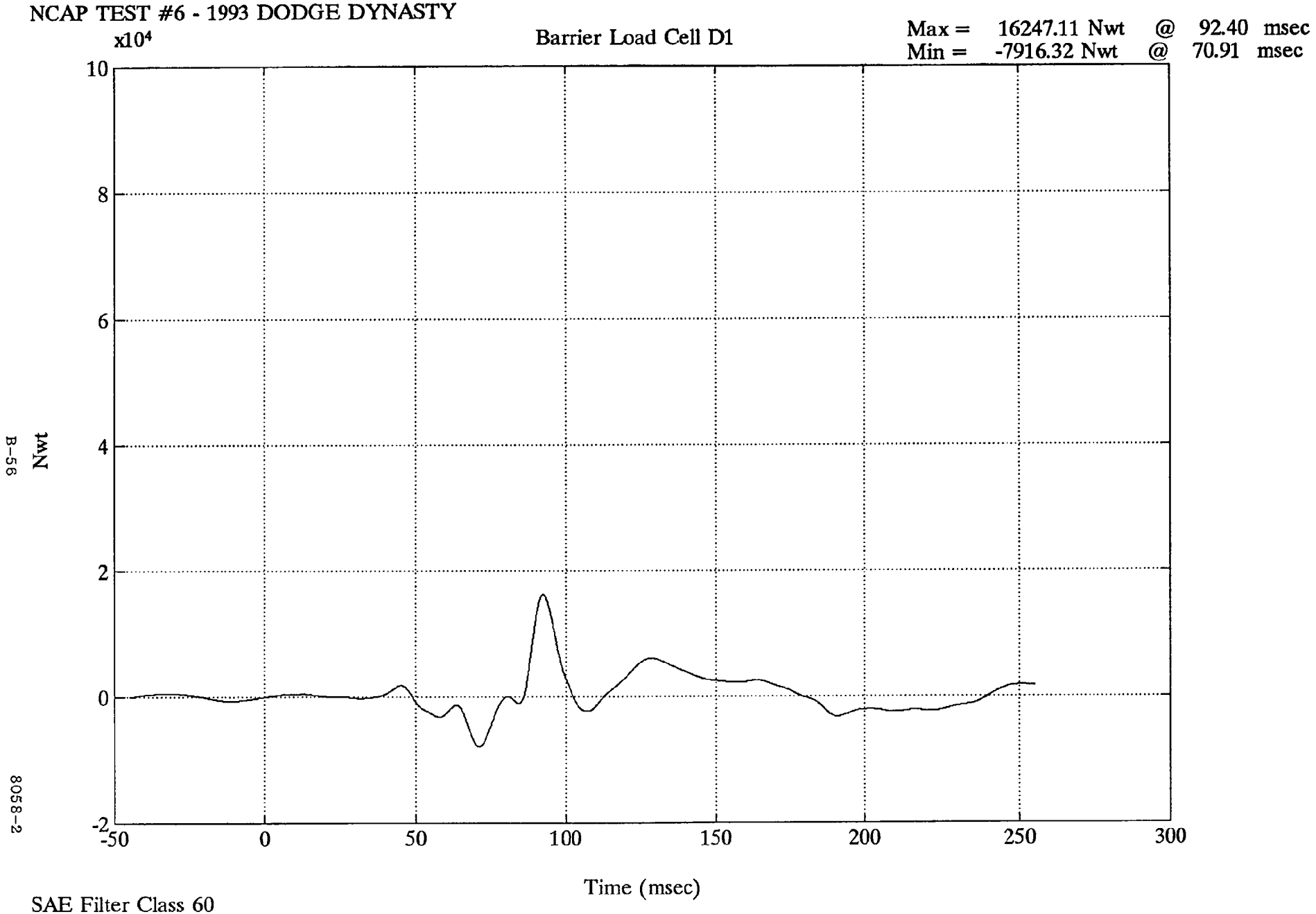
NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

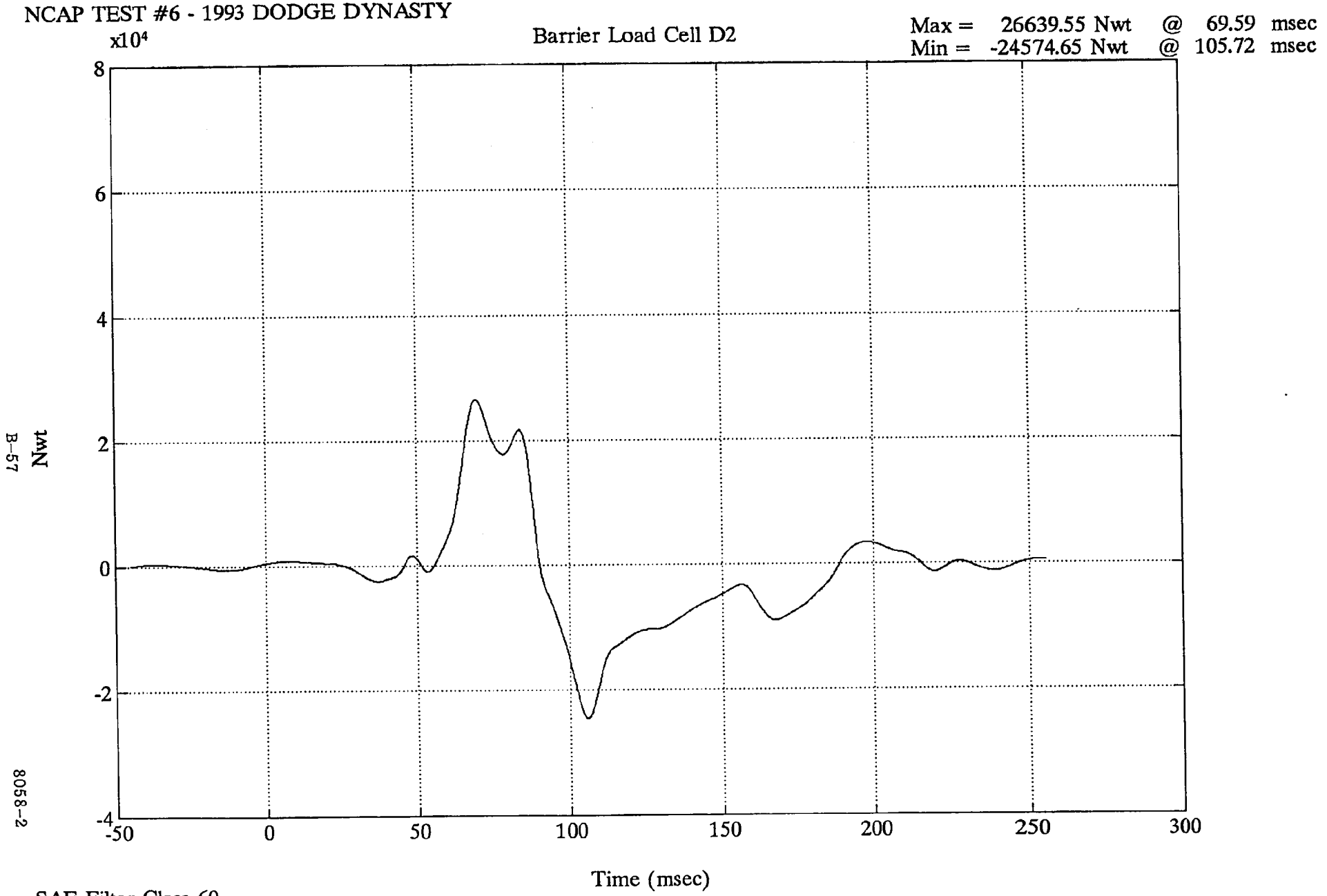
NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

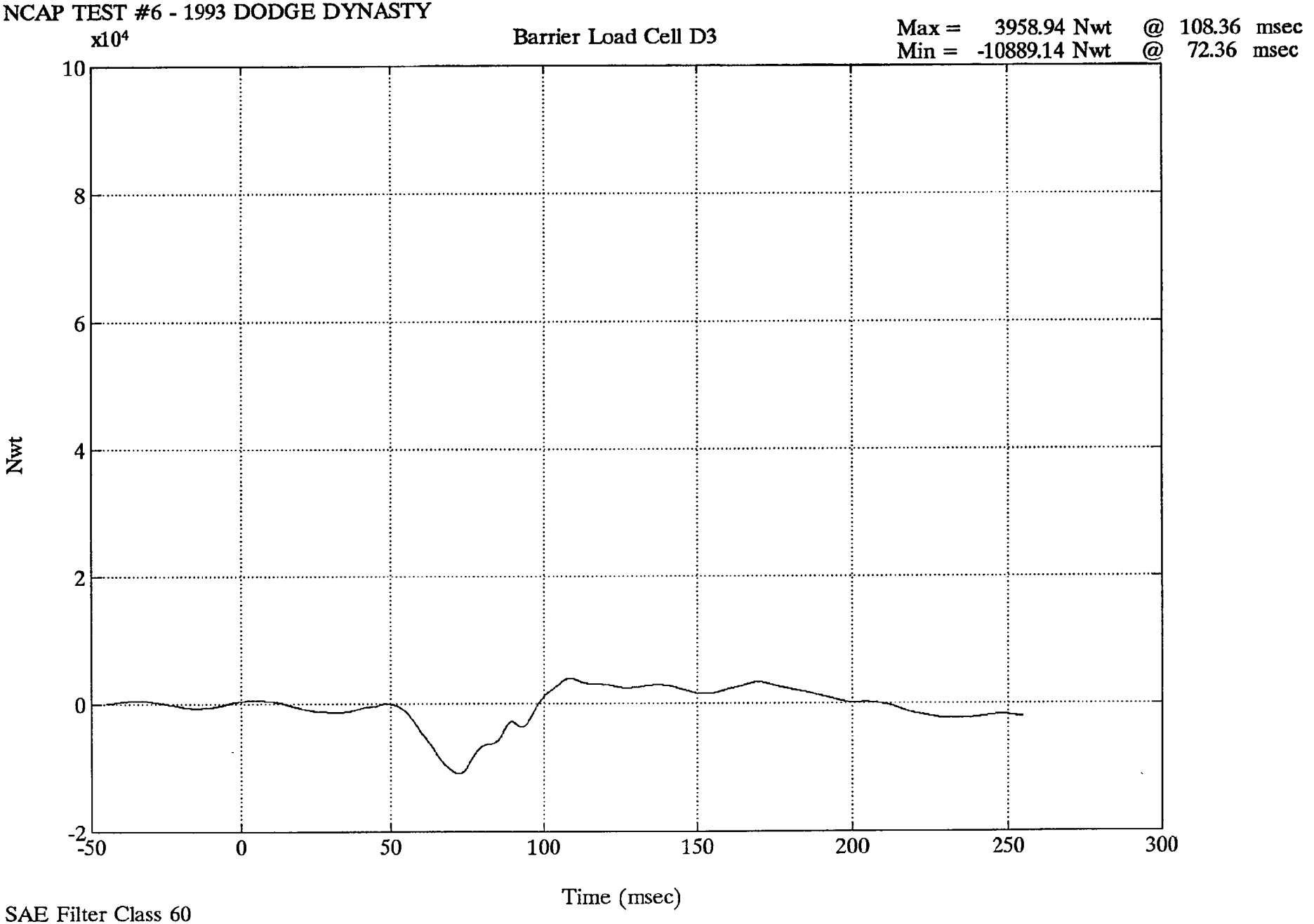
NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

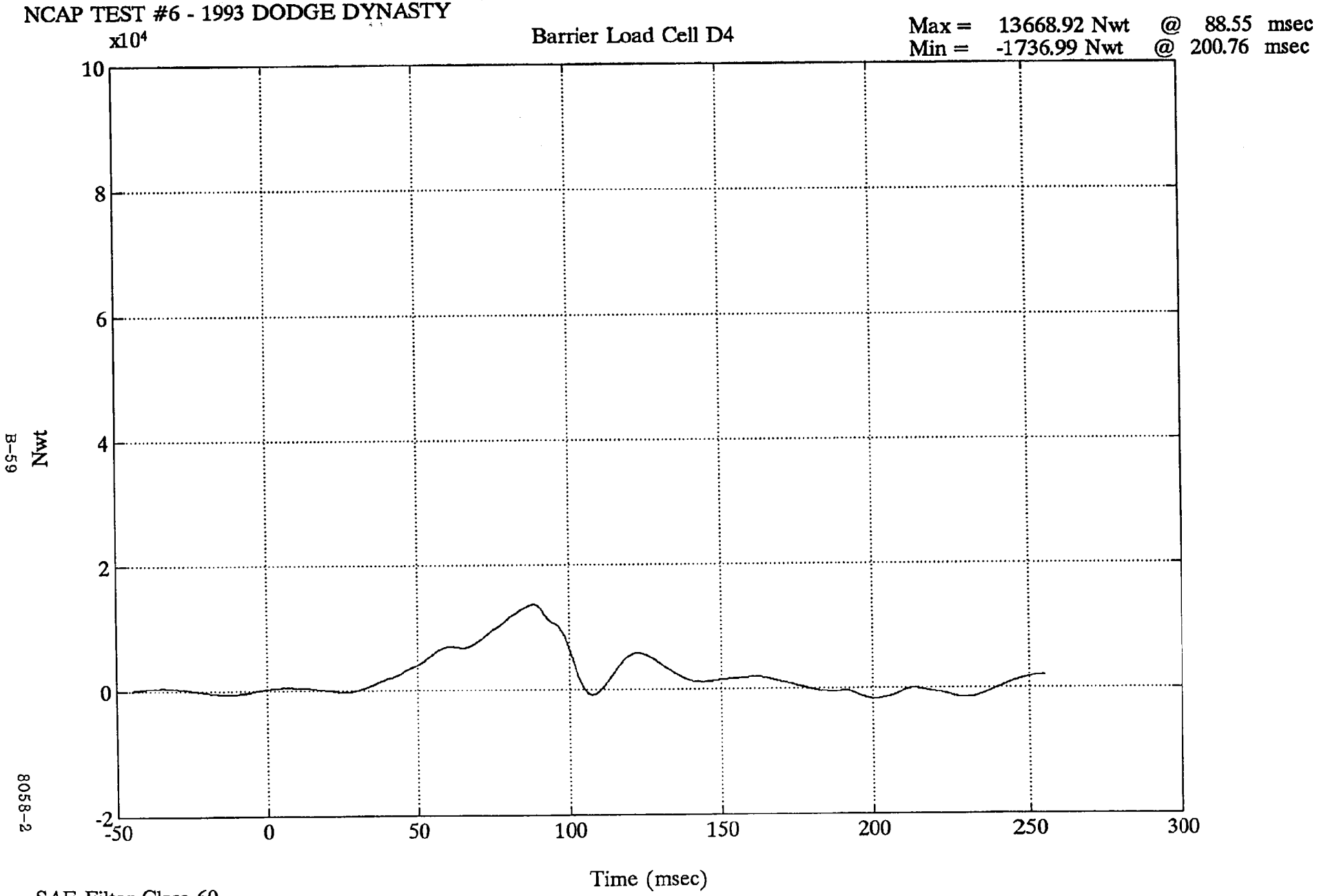
NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

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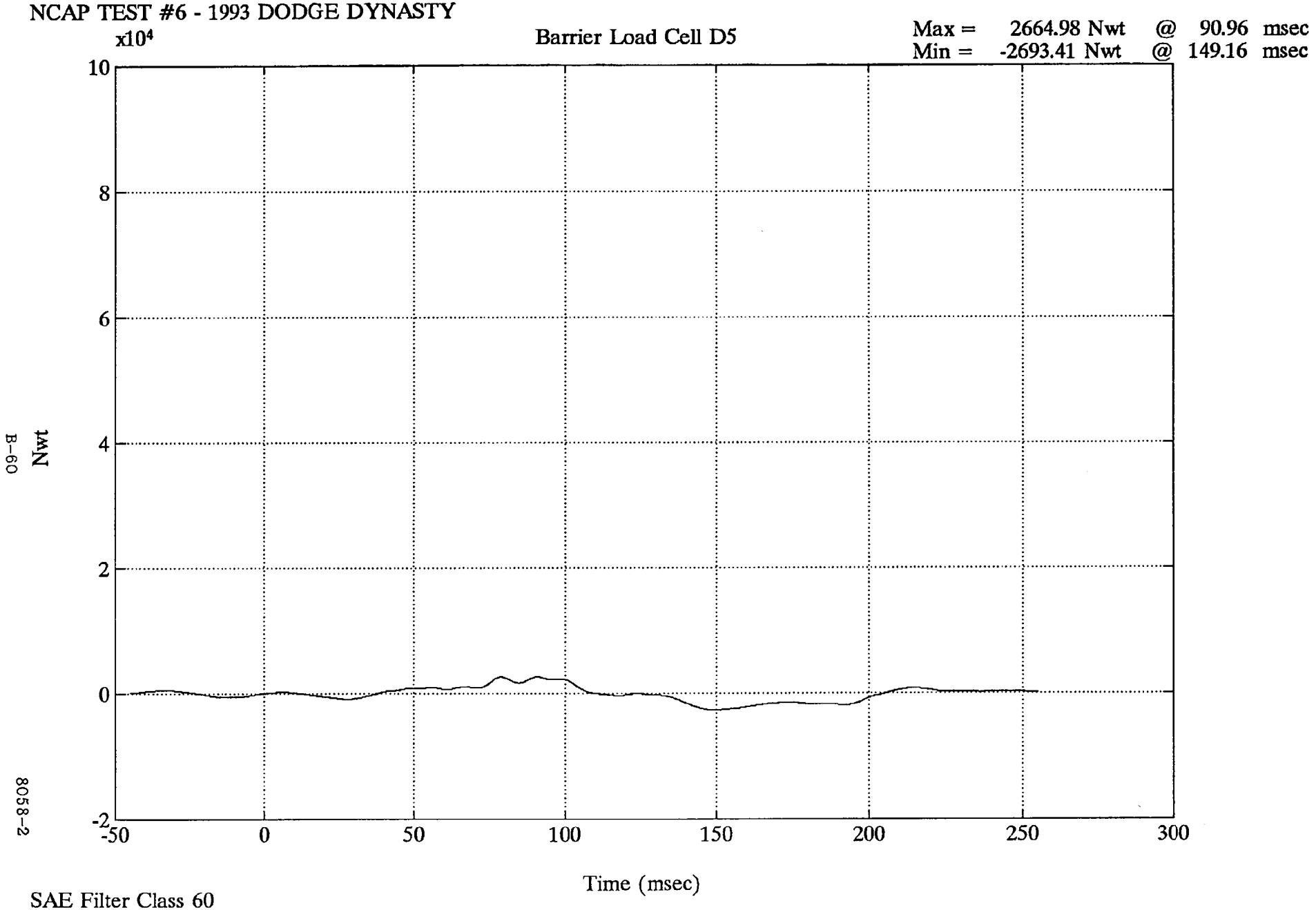
8058-2

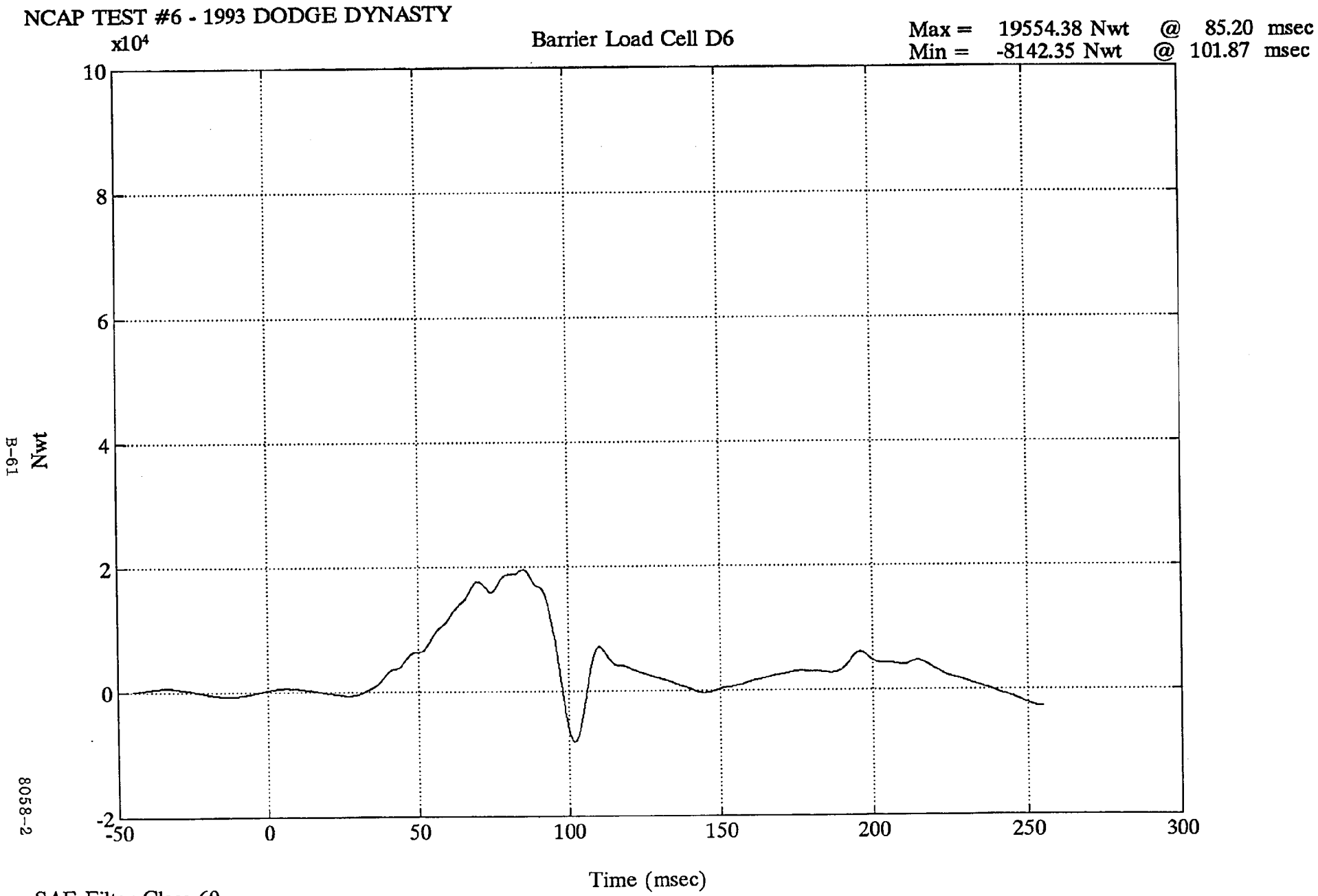
NCAP TEST #6 - 1993 DODGE DYNASTY



B-60

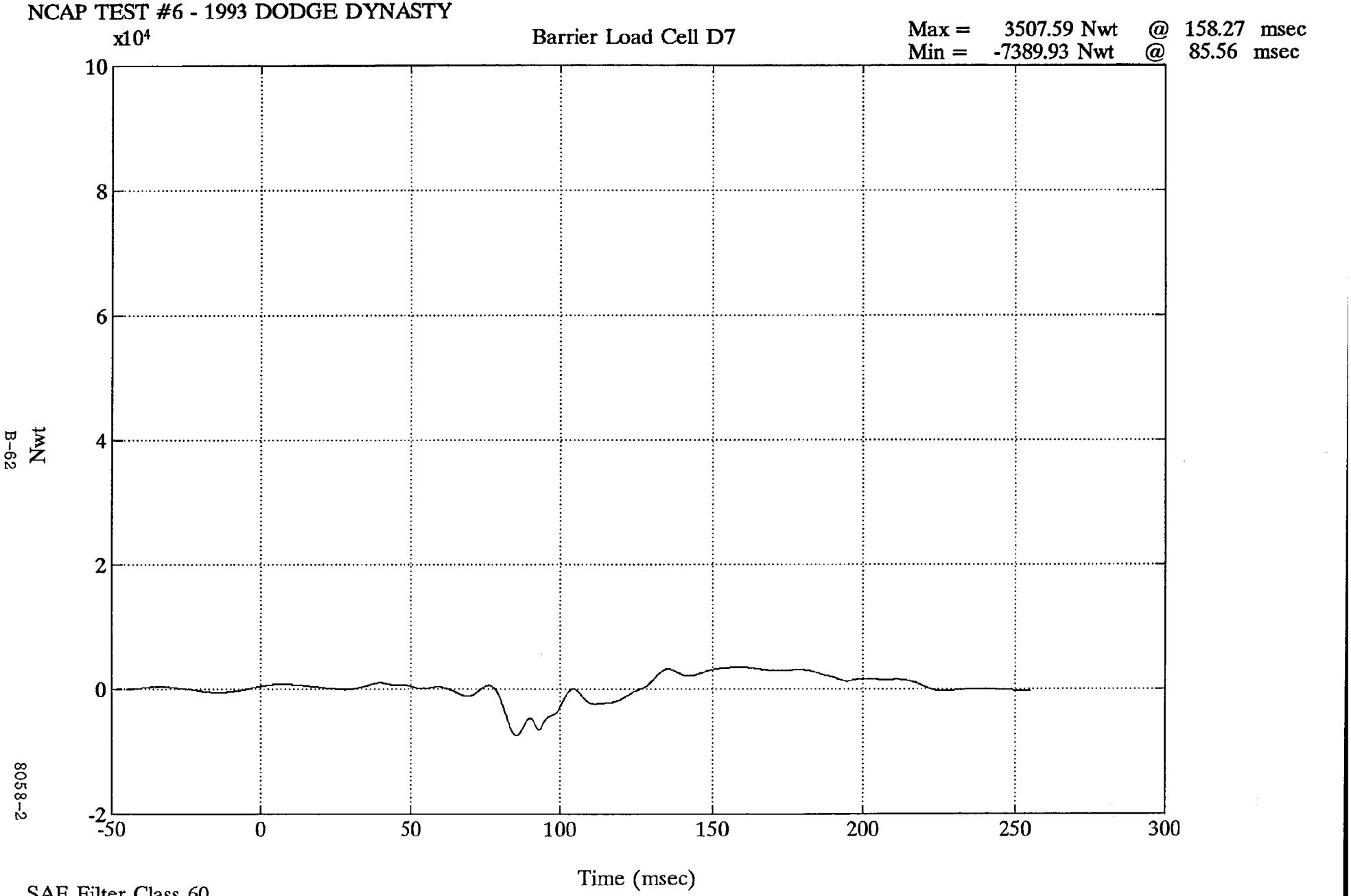
8058-2

SAE Filter Class 60



SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

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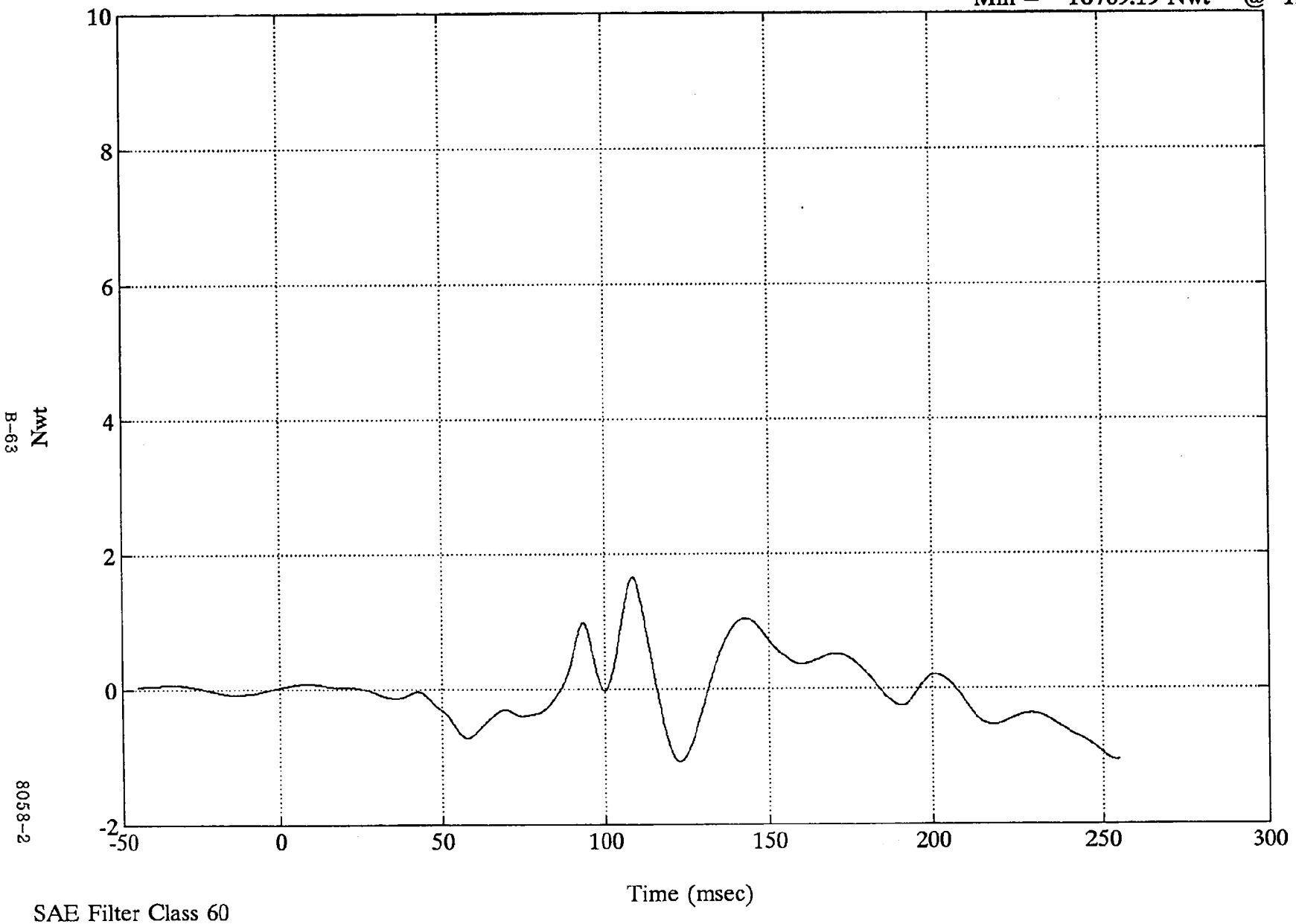
8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY

Barrier Load Cell D8

Max = 16484.35 Nwt @ 108.47 msec
Min = -10709.19 Nwt @ 122.40 msec

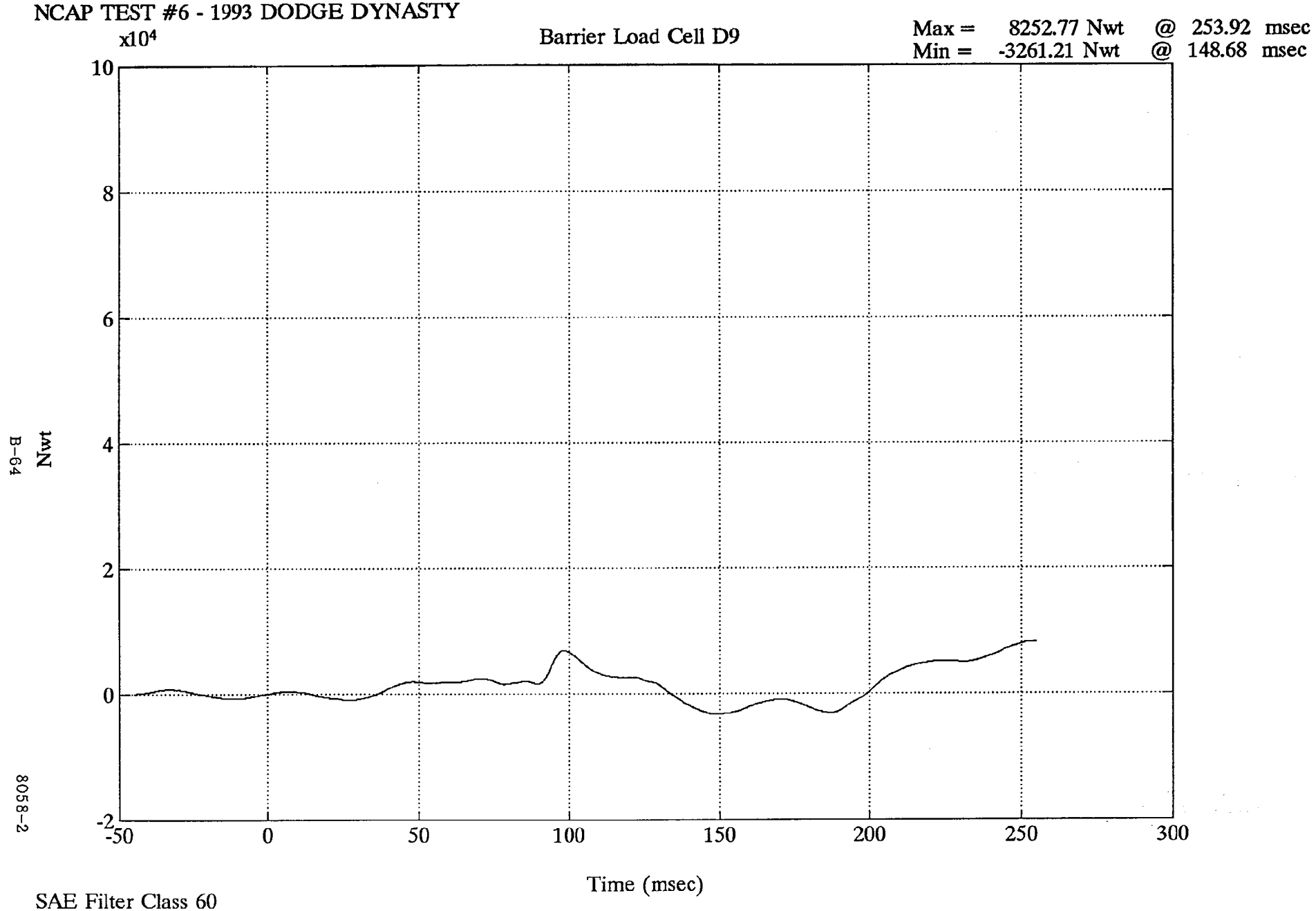


B-63

8058-2

SAE Filter Class 60

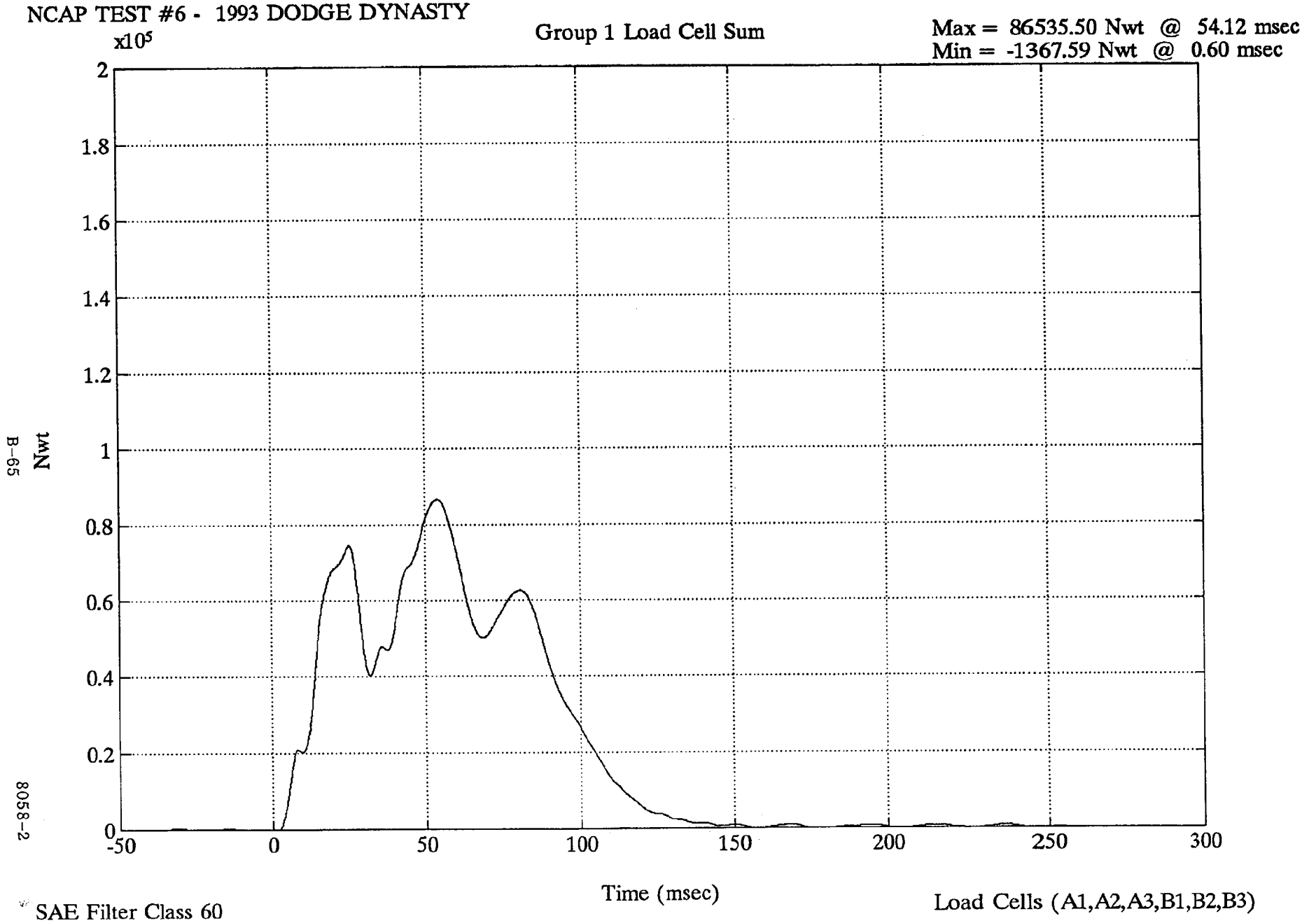
NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

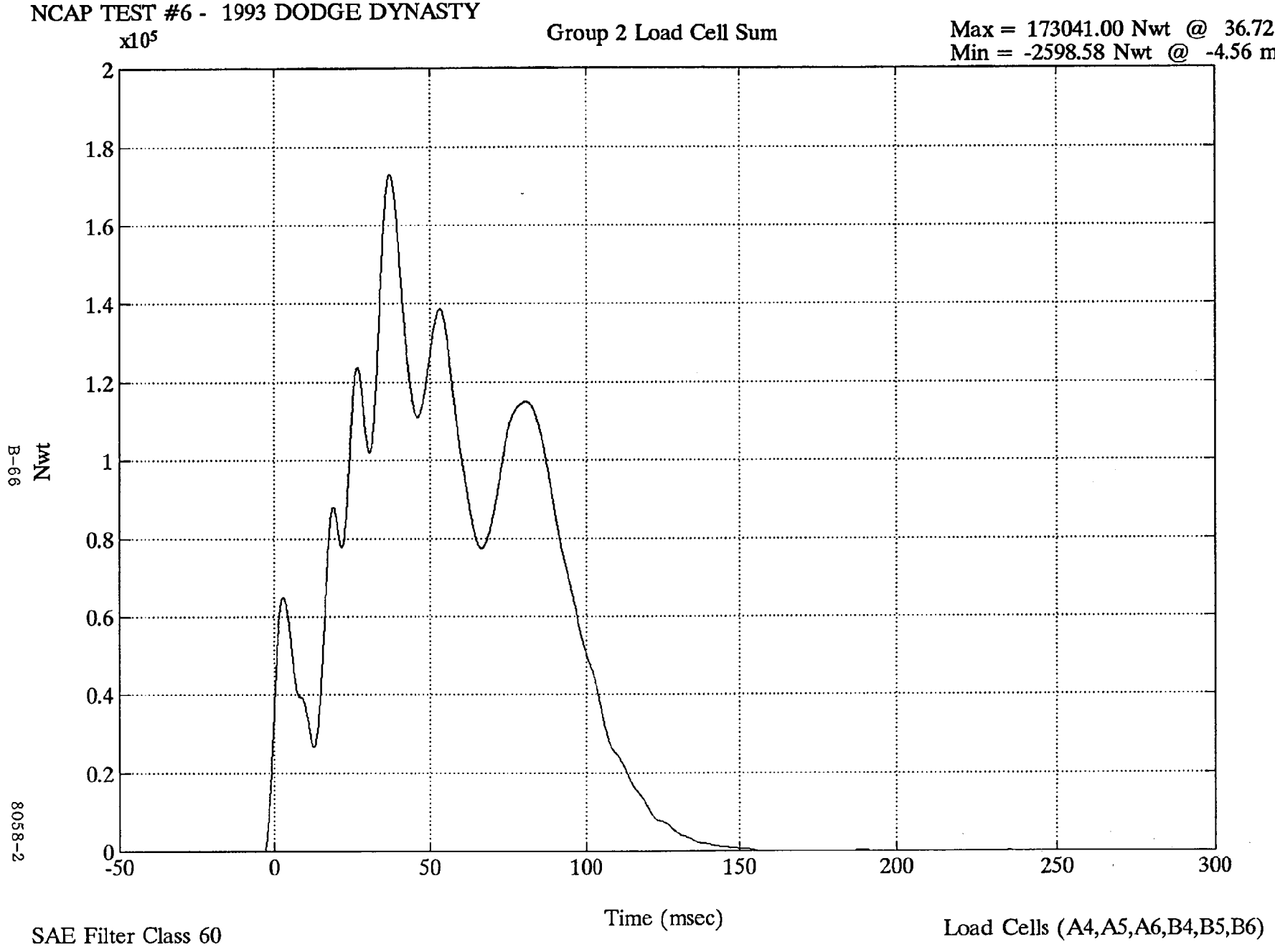
NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

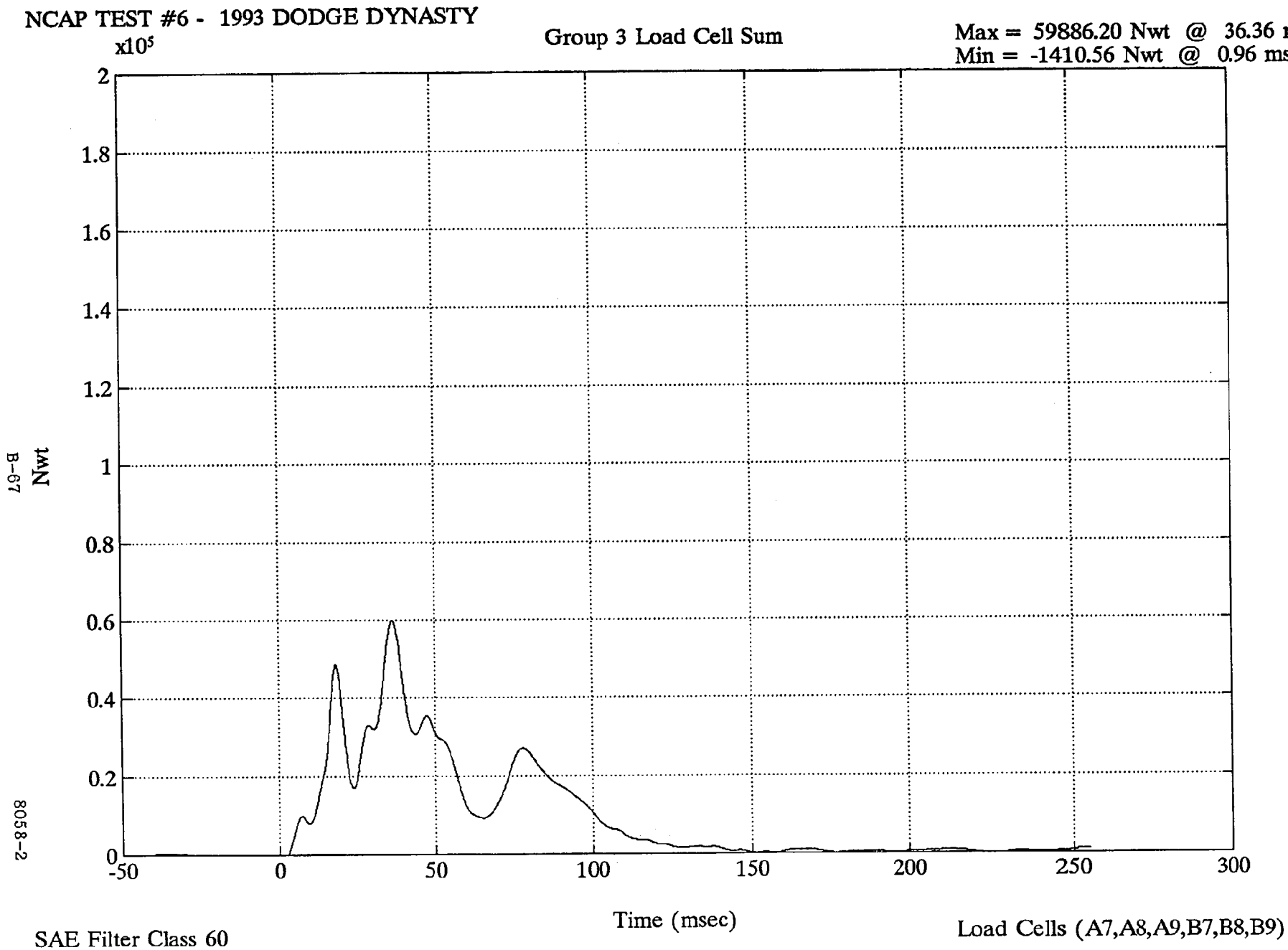
Load Cells (A1,A2,A3,B1,B2,B3)

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

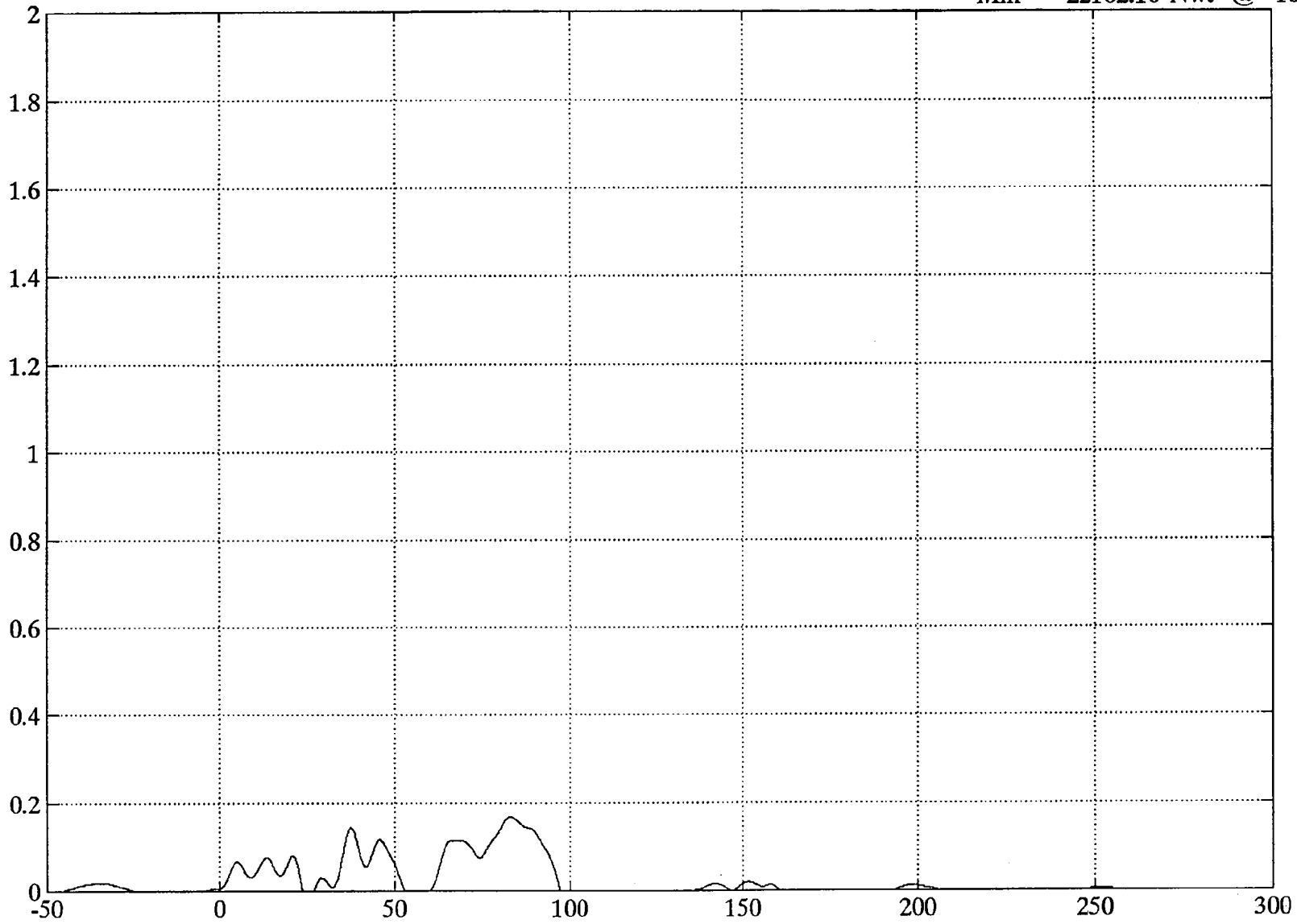
Load Cells (A4,A5,A6,B4,B5,B6)


NCAP TEST #6 - 1993 DODGE DYNASTY
Group 3 Load Cell Sum
Max = 59886.20 Nwt @ 36.36 msec
Min = -1410.56 Nwt @ 0.96 msec
x10^5
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Nwt
-50
0
50
100
150
200
250
300
Time (msec)
SAE Filter Class 60
Load Cells (A7,A8,A9,B7,B8,B9)
B-67
8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY

Group 4 Load Cell Sum

Max = 16846.10 Nwt @ 83.16 msec
Min = -22162.10 Nwt @ 105.72 msec



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8058-2

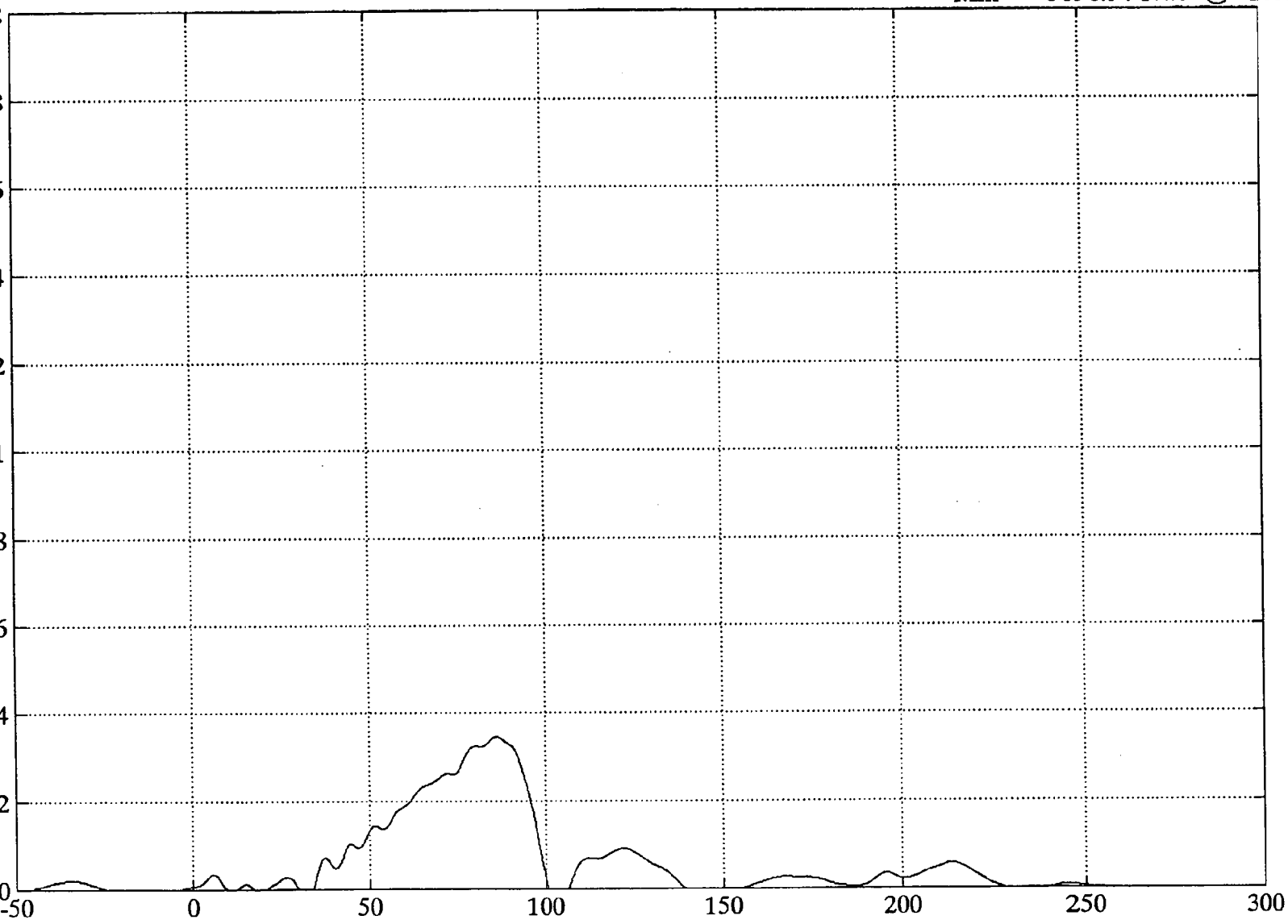
SAE Filter Class 60

Load Cells (C1,C2,C3,D1,D2,D3)

NCAP TEST #6 - 1993 DODGE DYNASTY

Group 5 Load Cell Sum

Max = 34566.80 Nwt @ 86.28 msec
Min = -3690.54 Nwt @ 103.32 msec



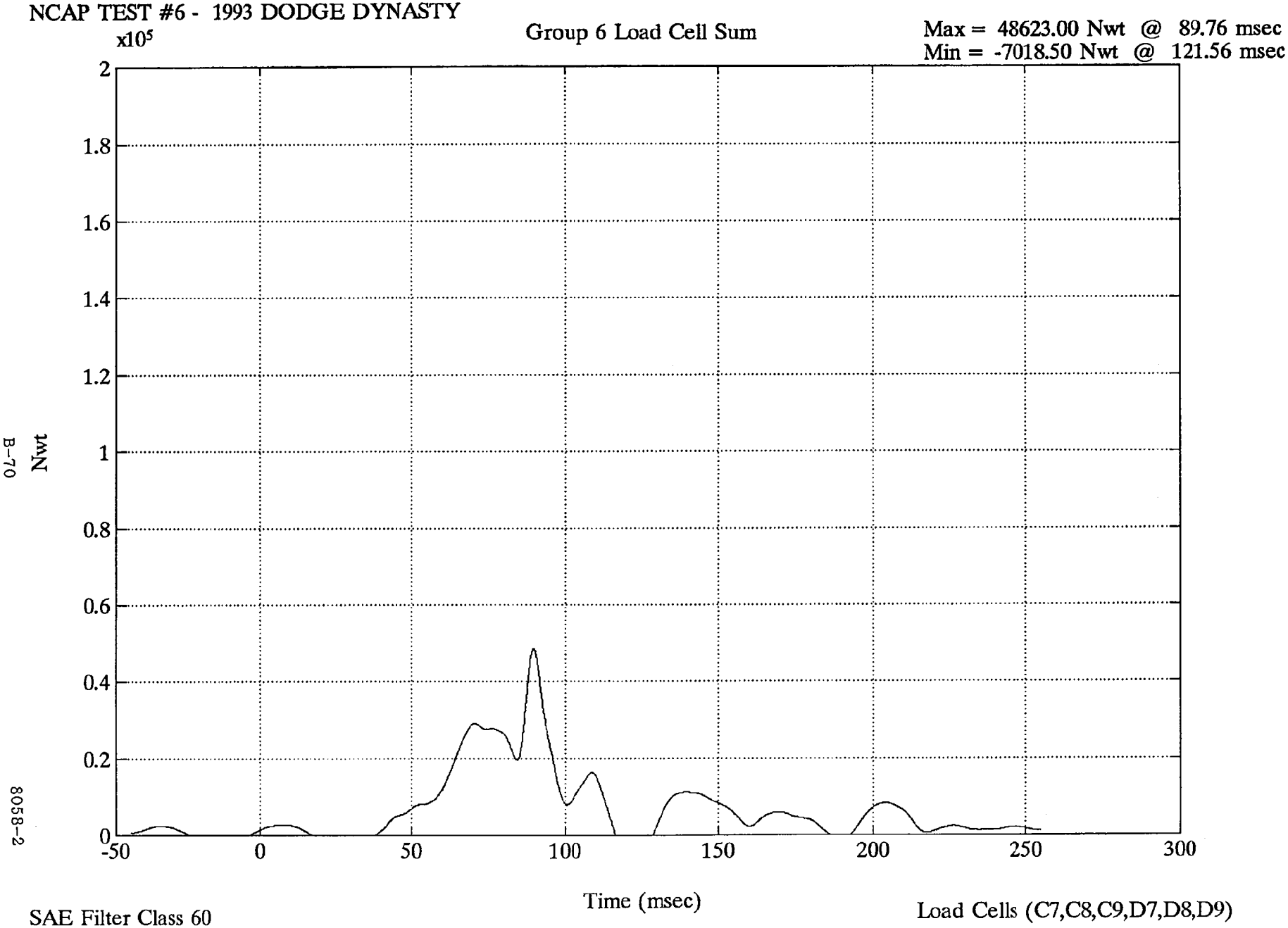
B-69

8058-2

SAE Filter Class 60

Load Cells (C4,C5,C6,D4,D5,D6)

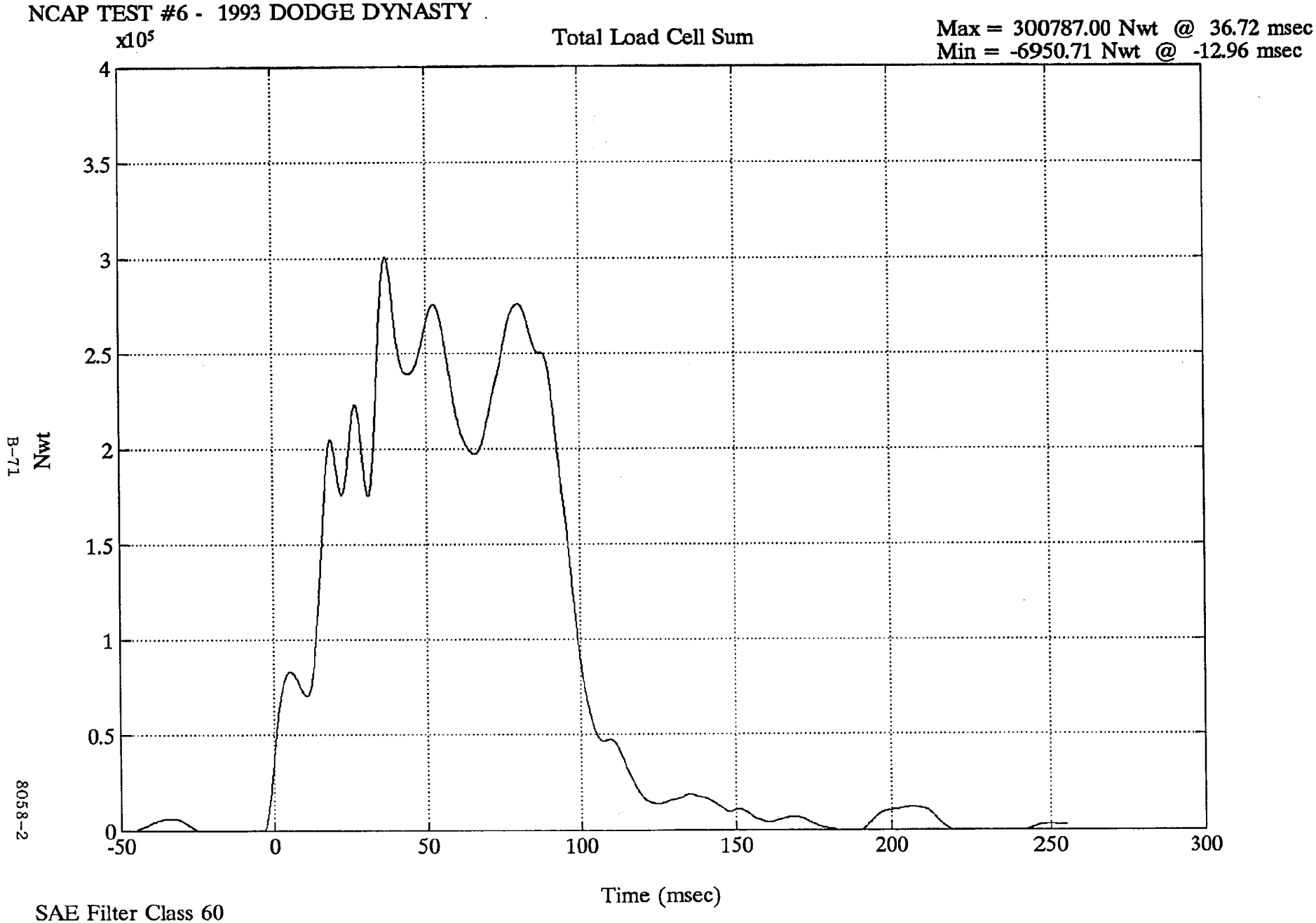
NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 60

8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY



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8058-2

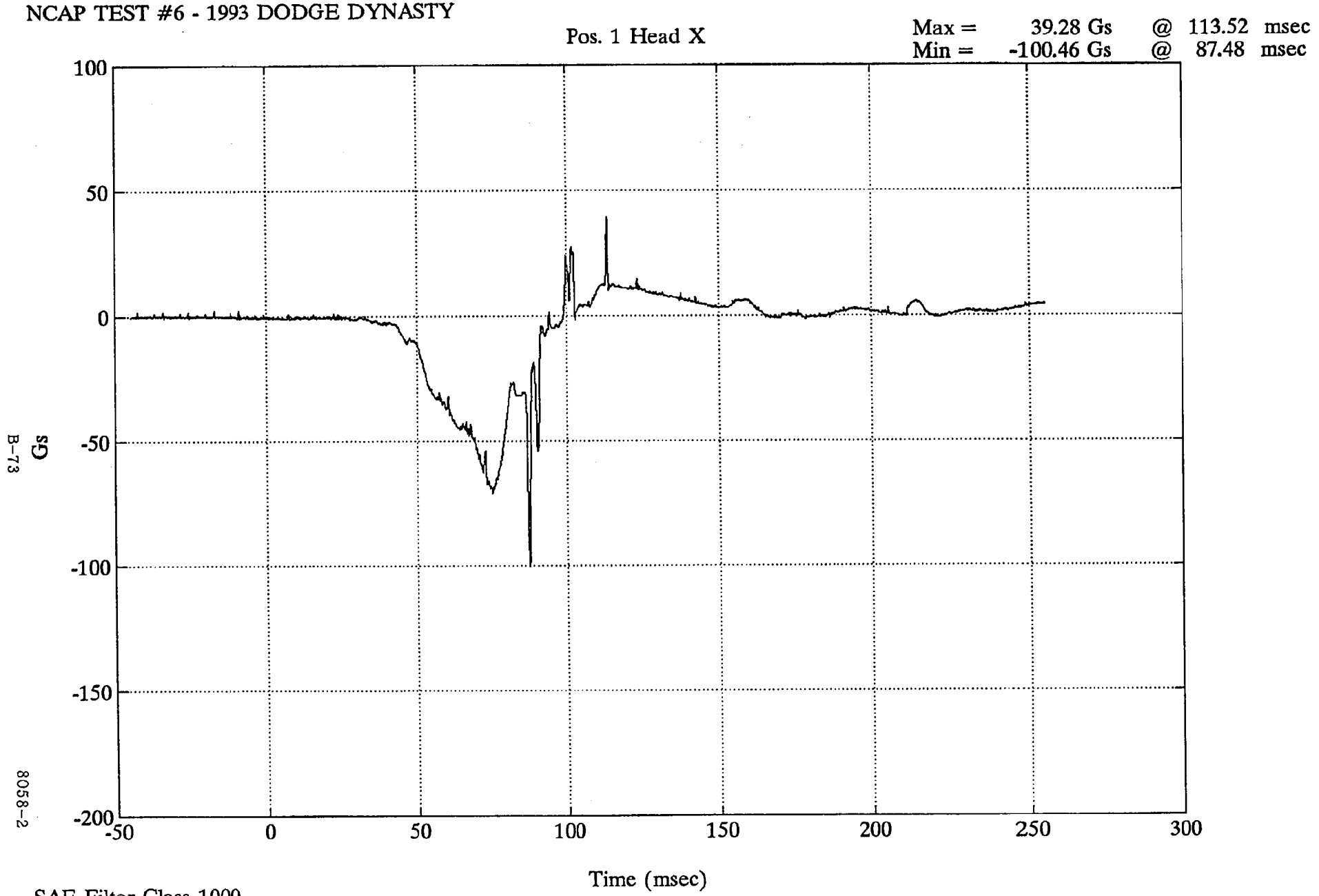
SAE Filter Class 60

TEST NO. MP0301

DUMMY DATA

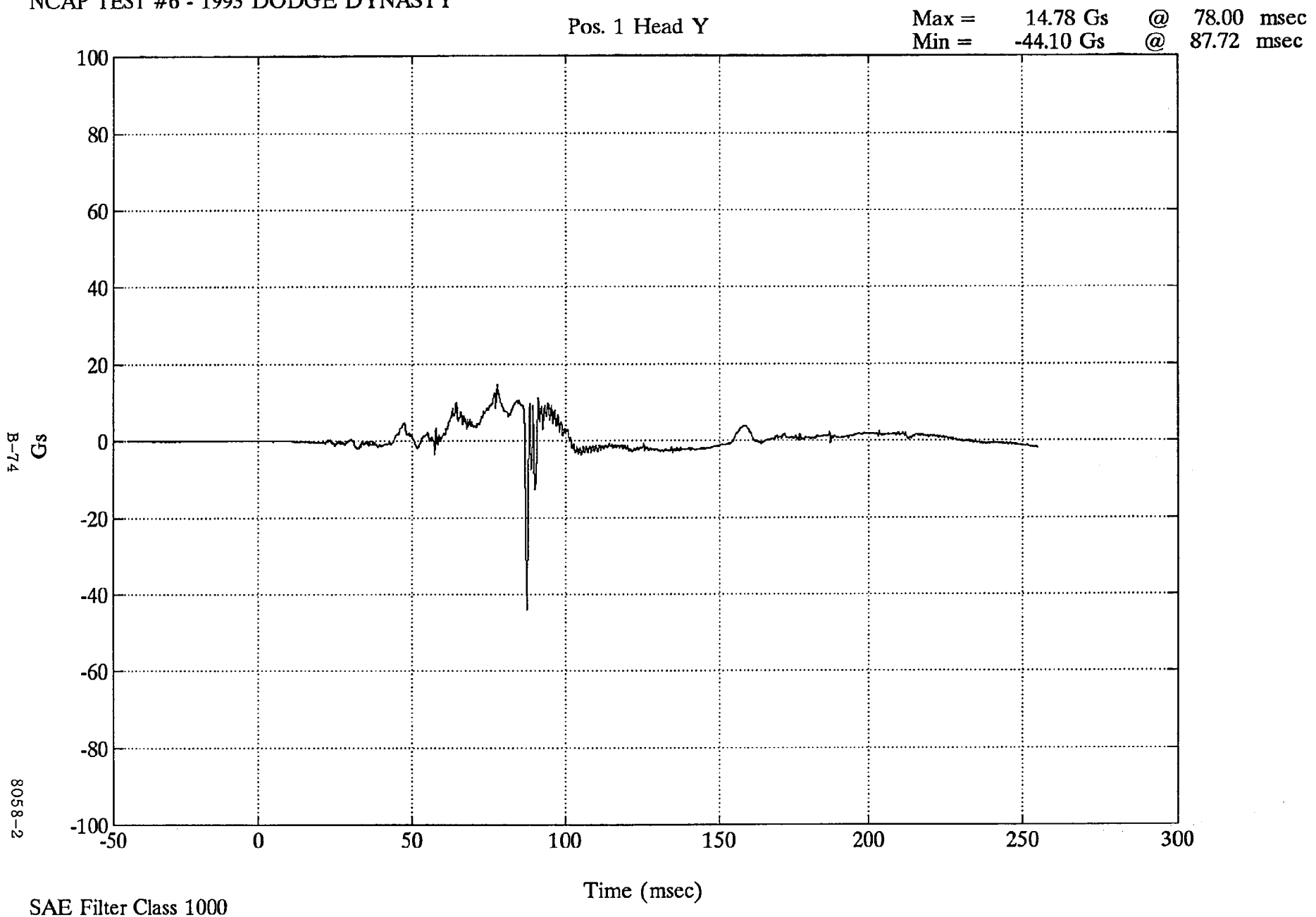
CLASS	FILTER CHANNEL
Head Accelerations	1000
Chest Accelerations	180
Chest Displacements	60
Femur Forces	600
Belt Loads	60
Belt Displacements	180
Neck Forces	1000
Neck Moments	600

NCAP TEST #6 - 1993 DODGE DYNASTY



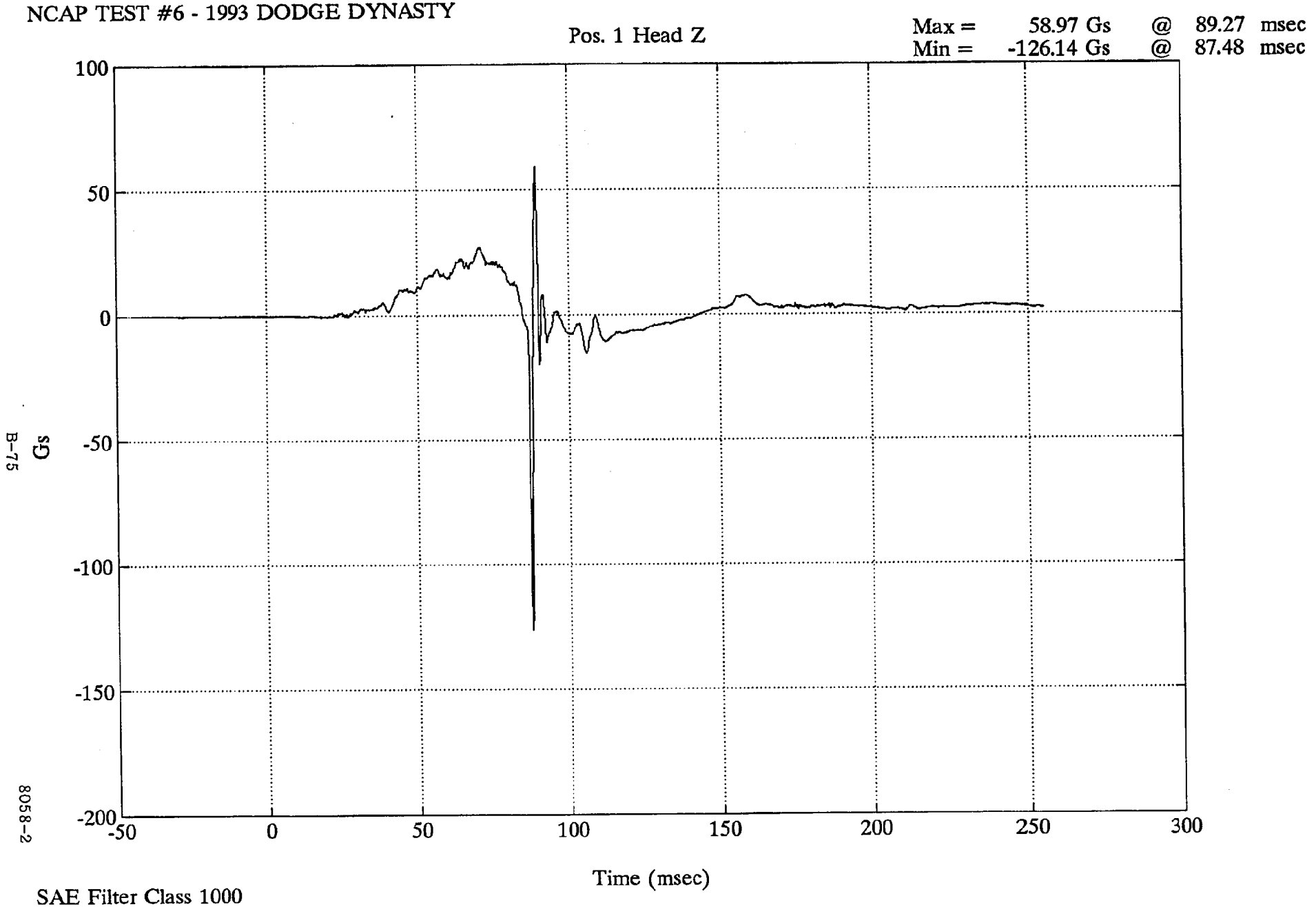
SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY



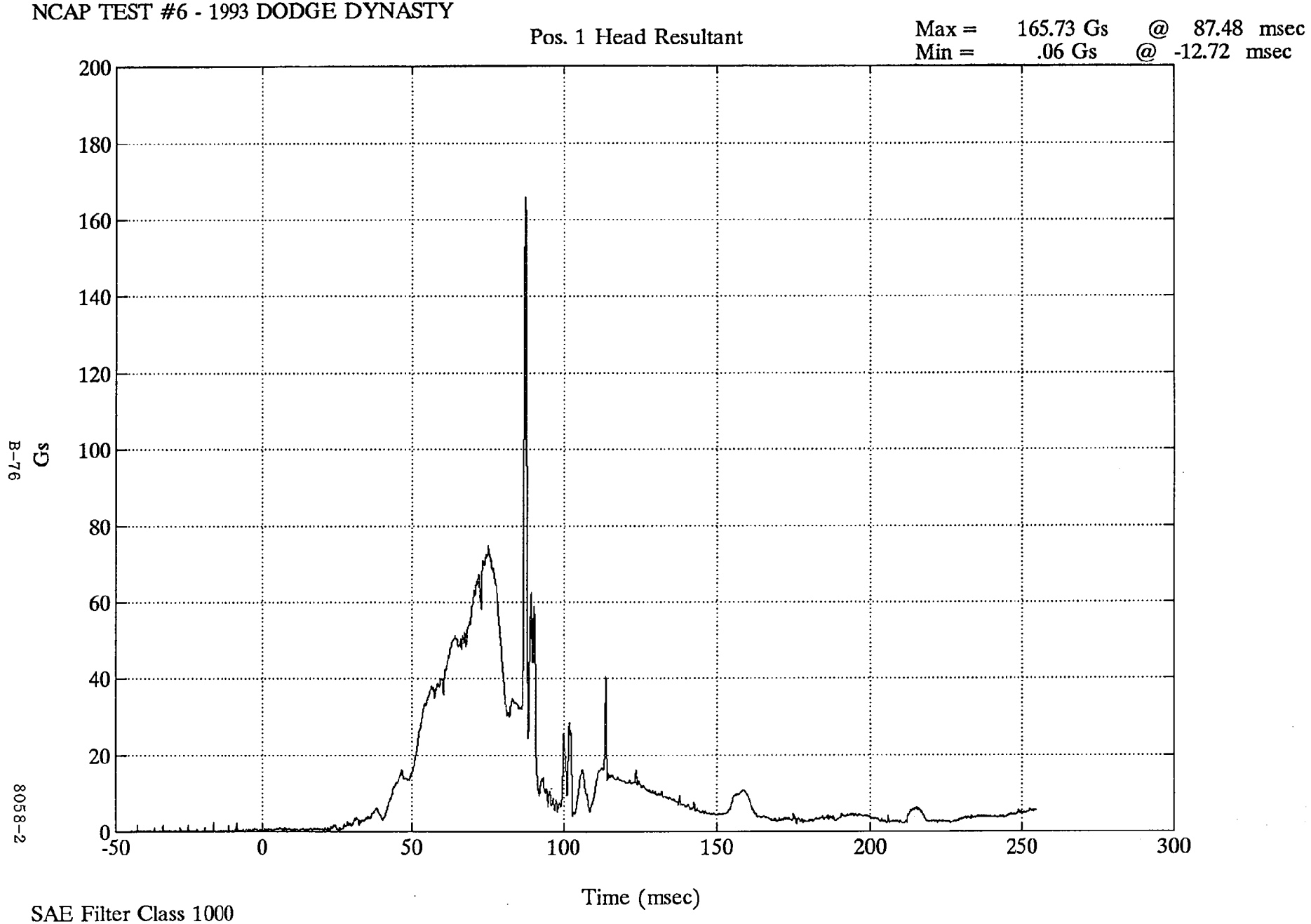
SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY



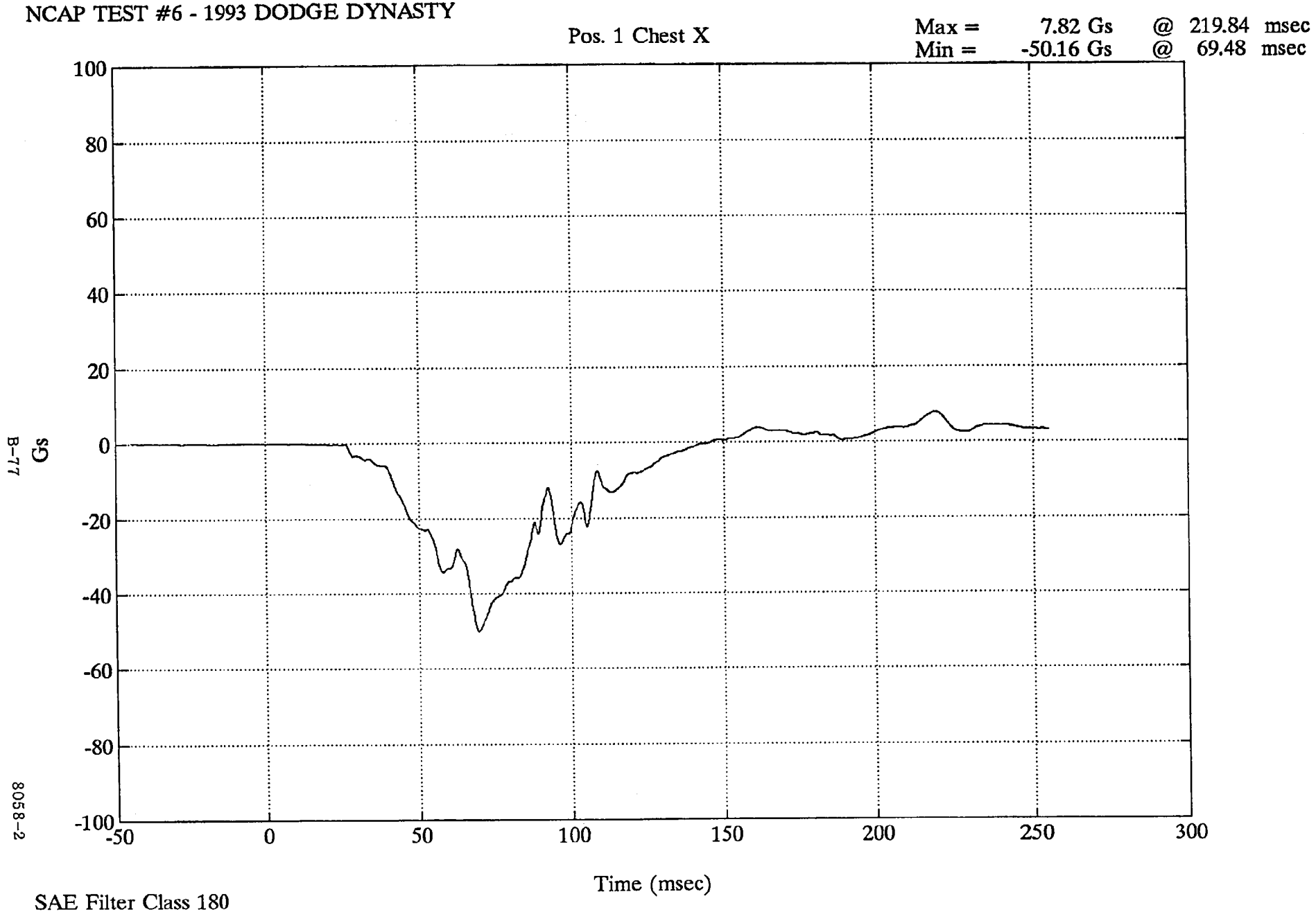
SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY



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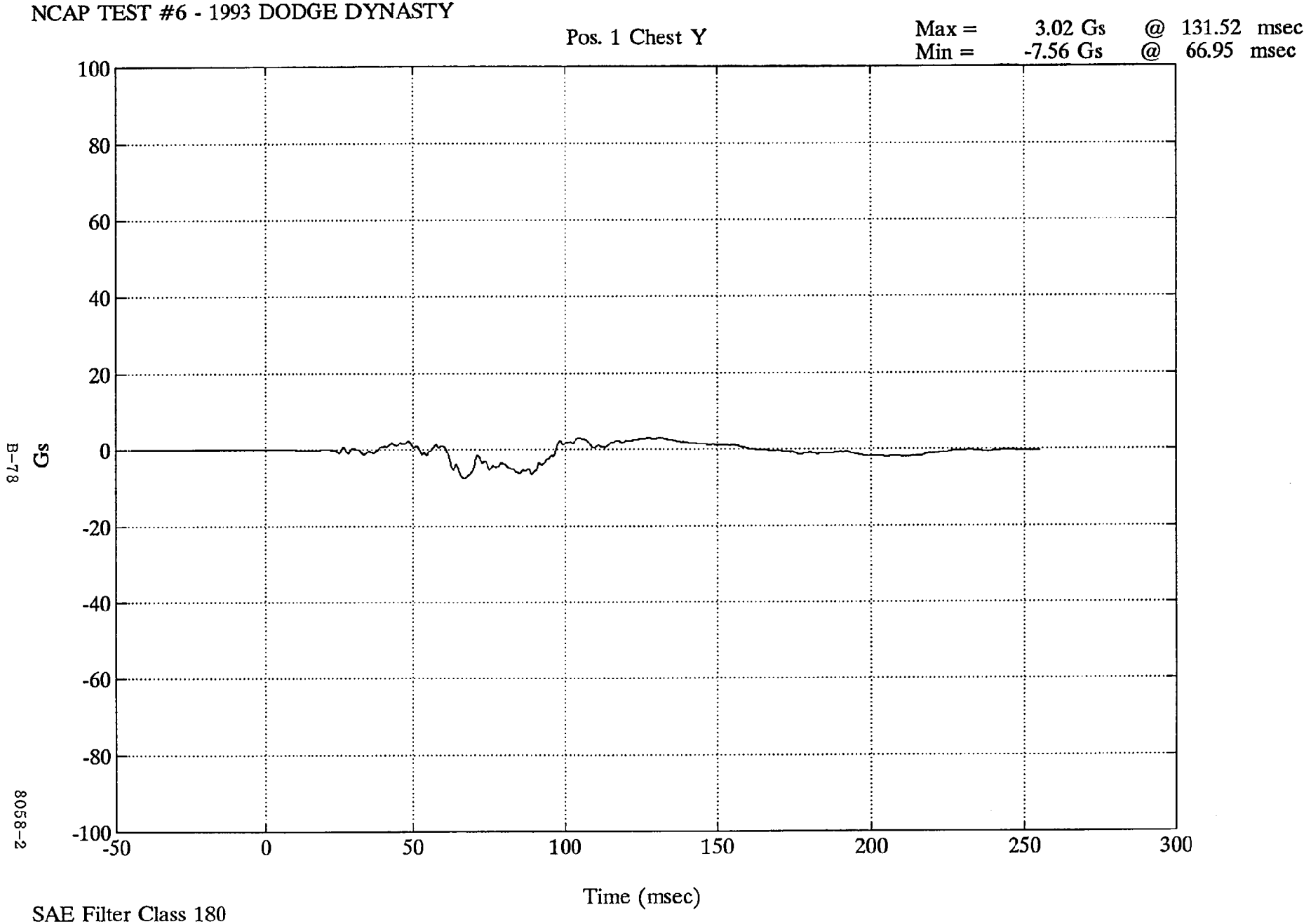
8058-2

SAE Filter Class 180

NCAP TEST #6 - 1993 DODGE DYNASTY

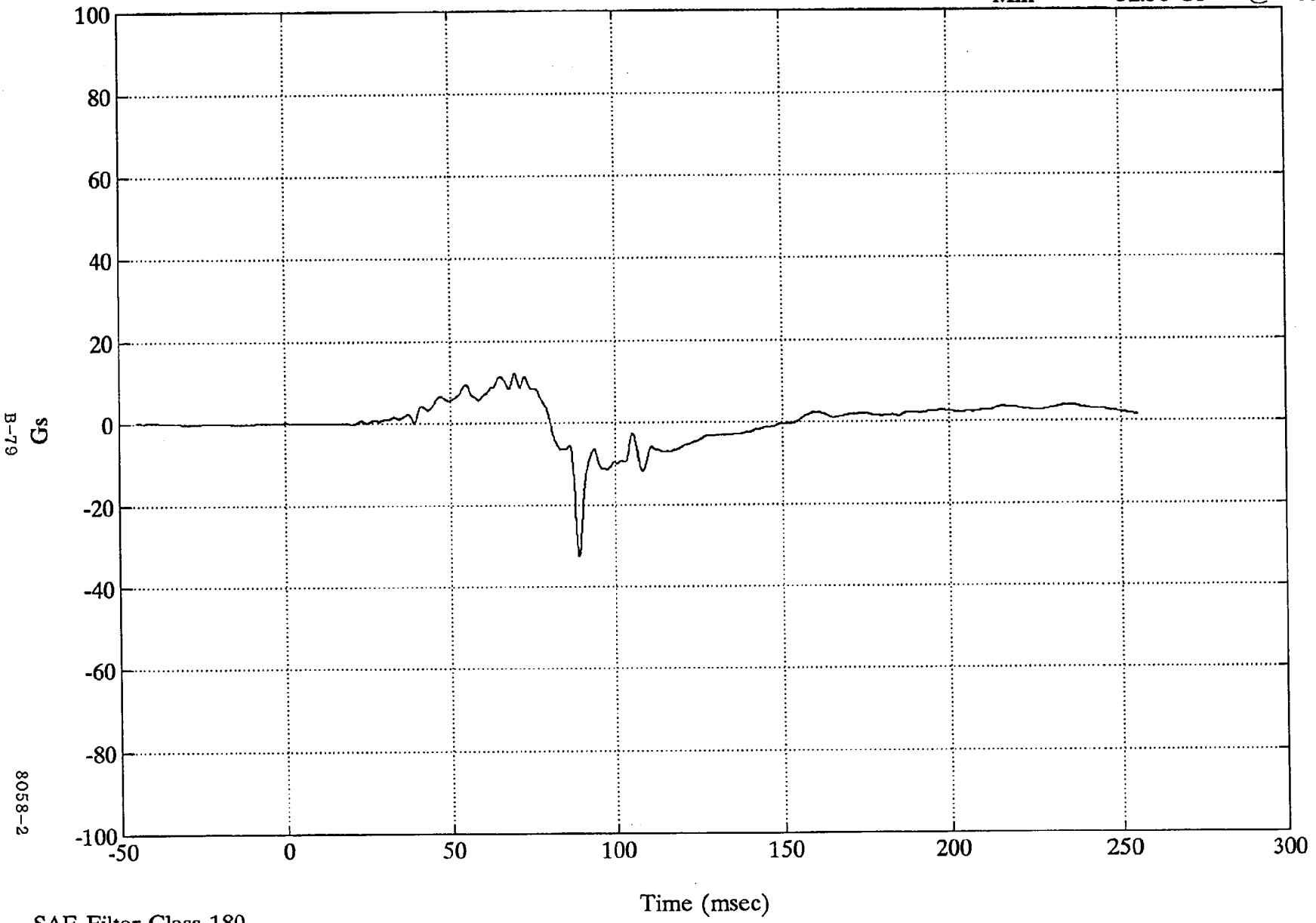


SAE Filter Class 180

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 1 Chest Z

Max = 12.04 Gs @ 69.48 msec
Min = -32.56 Gs @ 88.80 msec

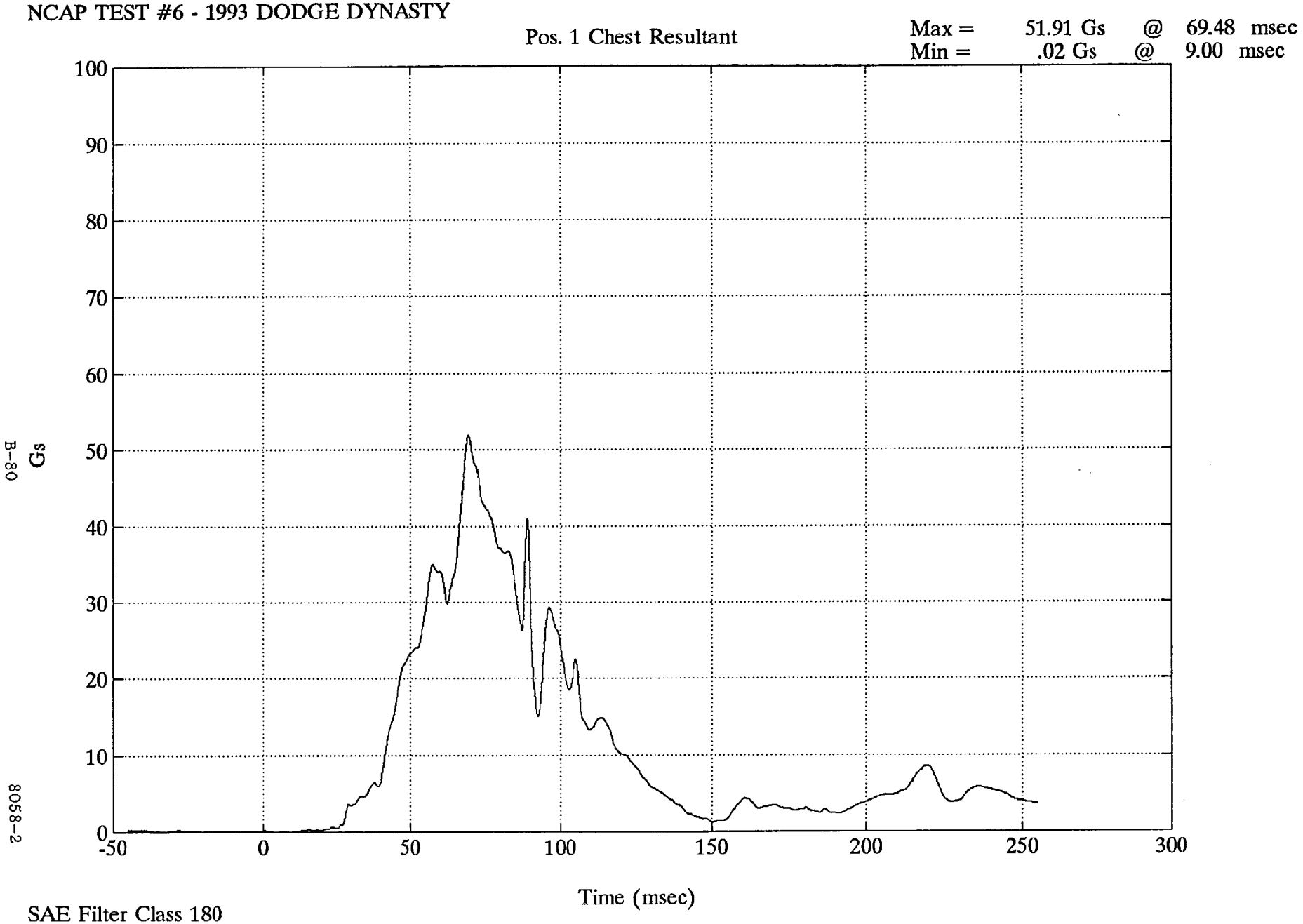


B-79

8058-2

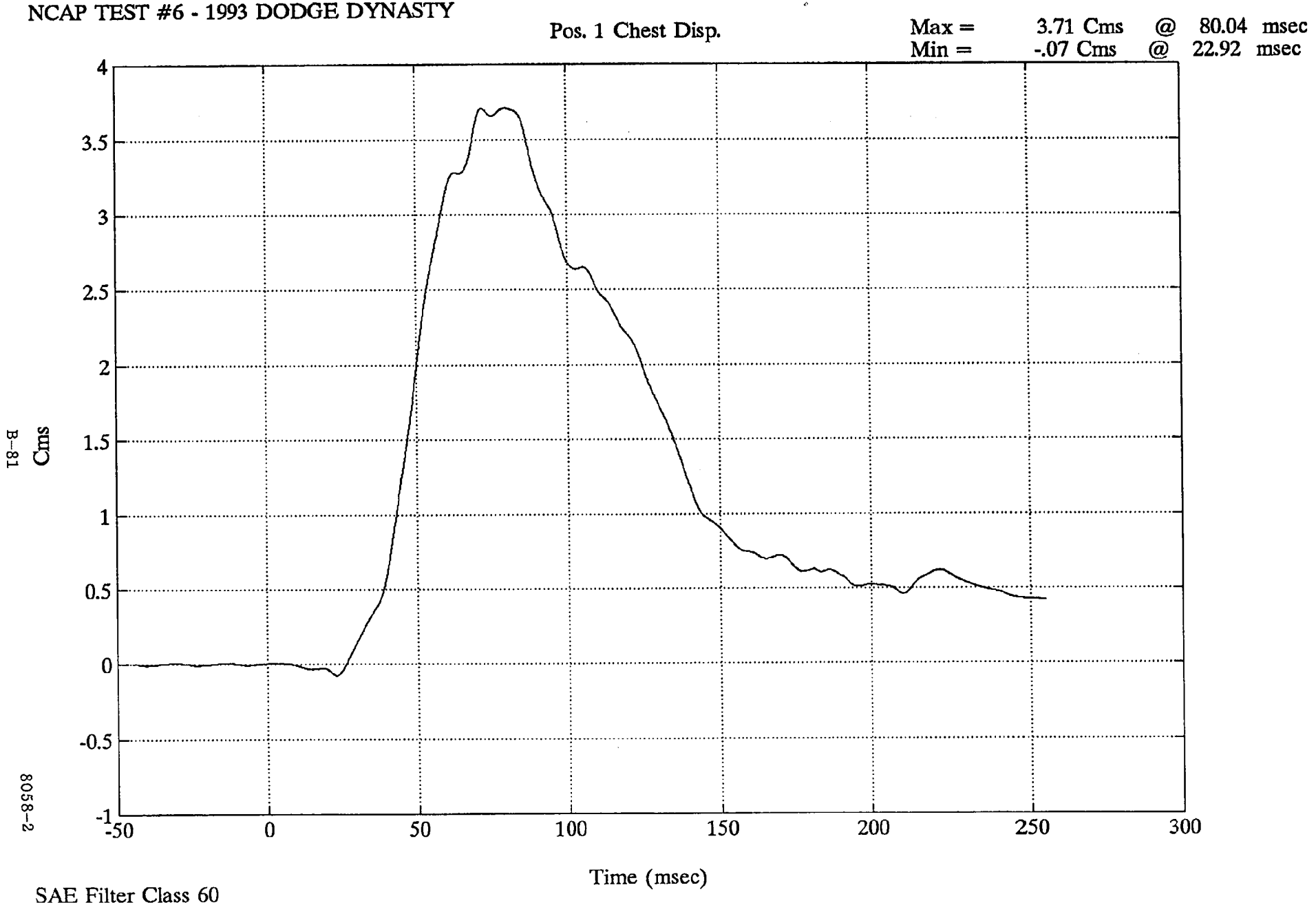
SAE Filter Class 180

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 180

NCAP TEST #6 - 1993 DODGE DYNASTY



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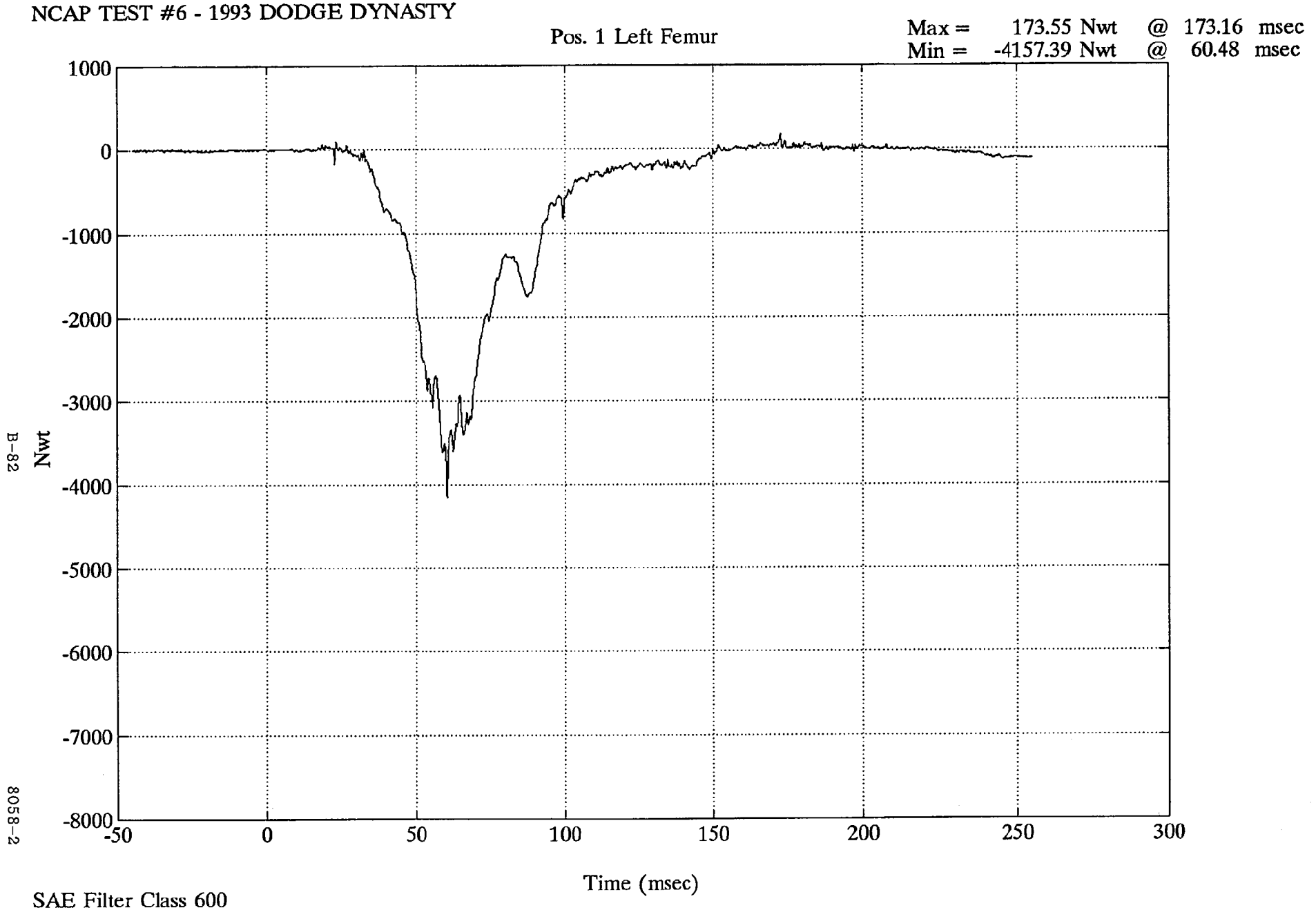
8058-2

SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY



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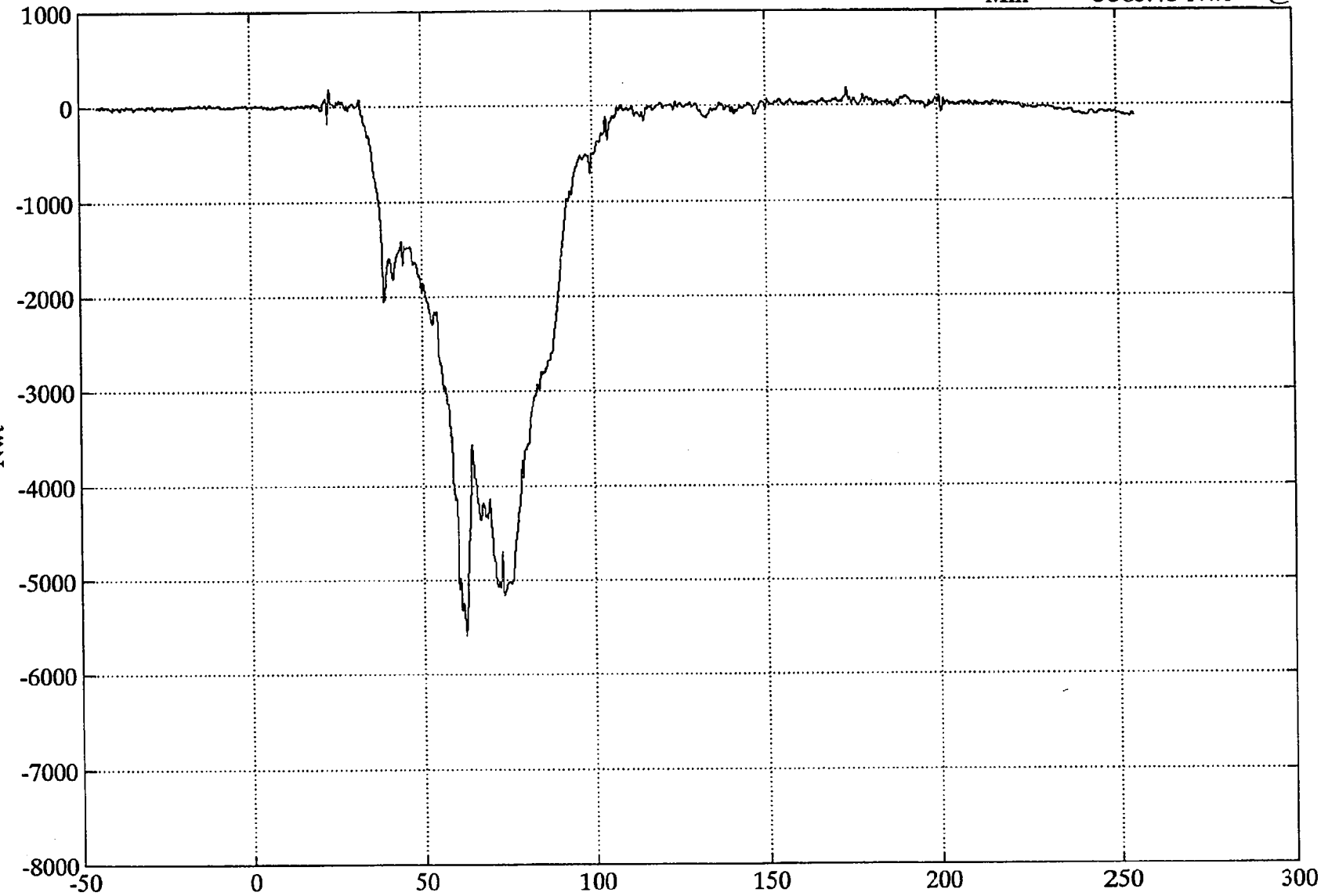
8058-2

SAE Filter Class 600

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 1 Right Femur

Max = 189.44 Nwt @ 23.15 msec
Min = -5585.48 Nwt @ 62.51 msec

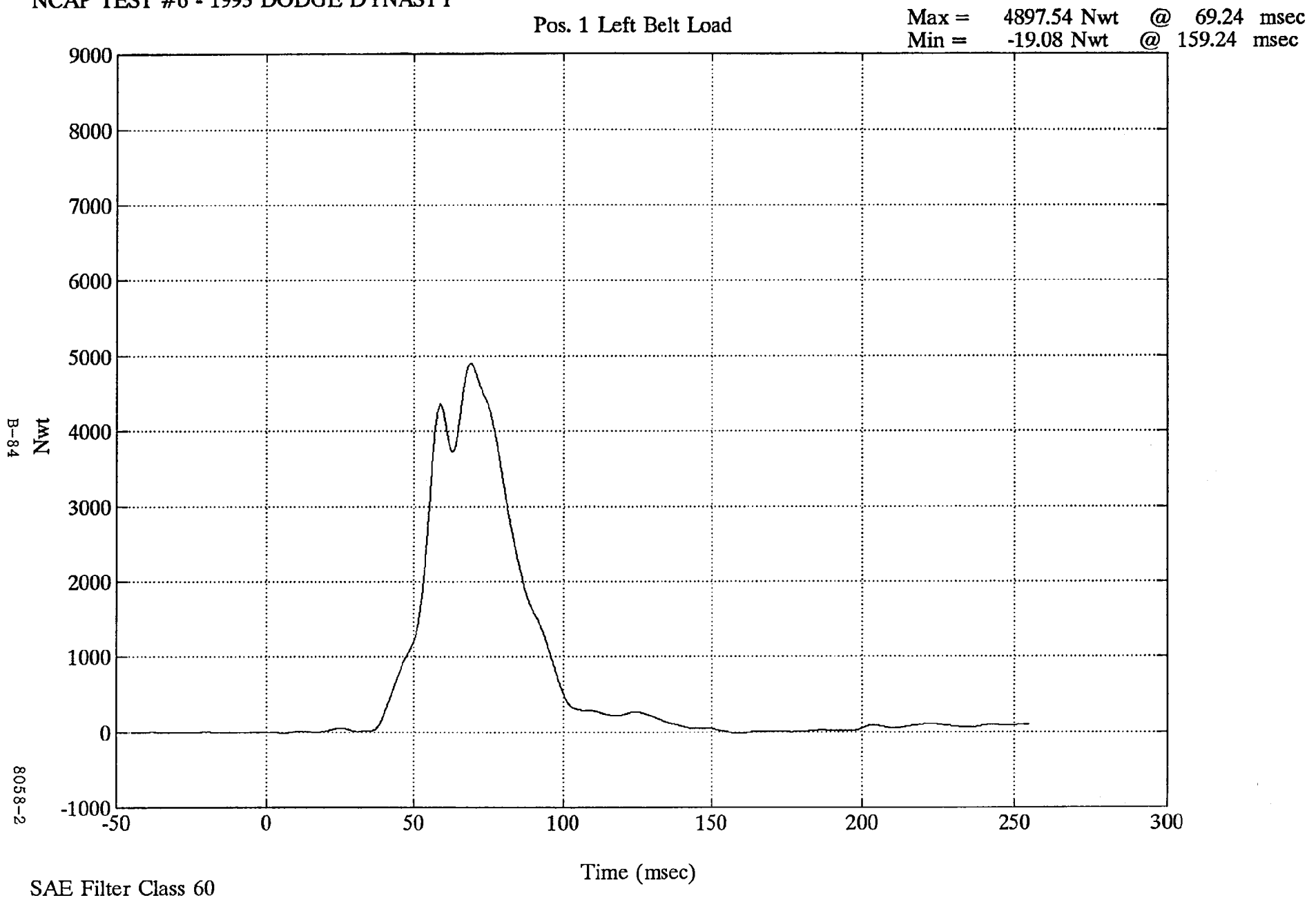


B-83

8058-2

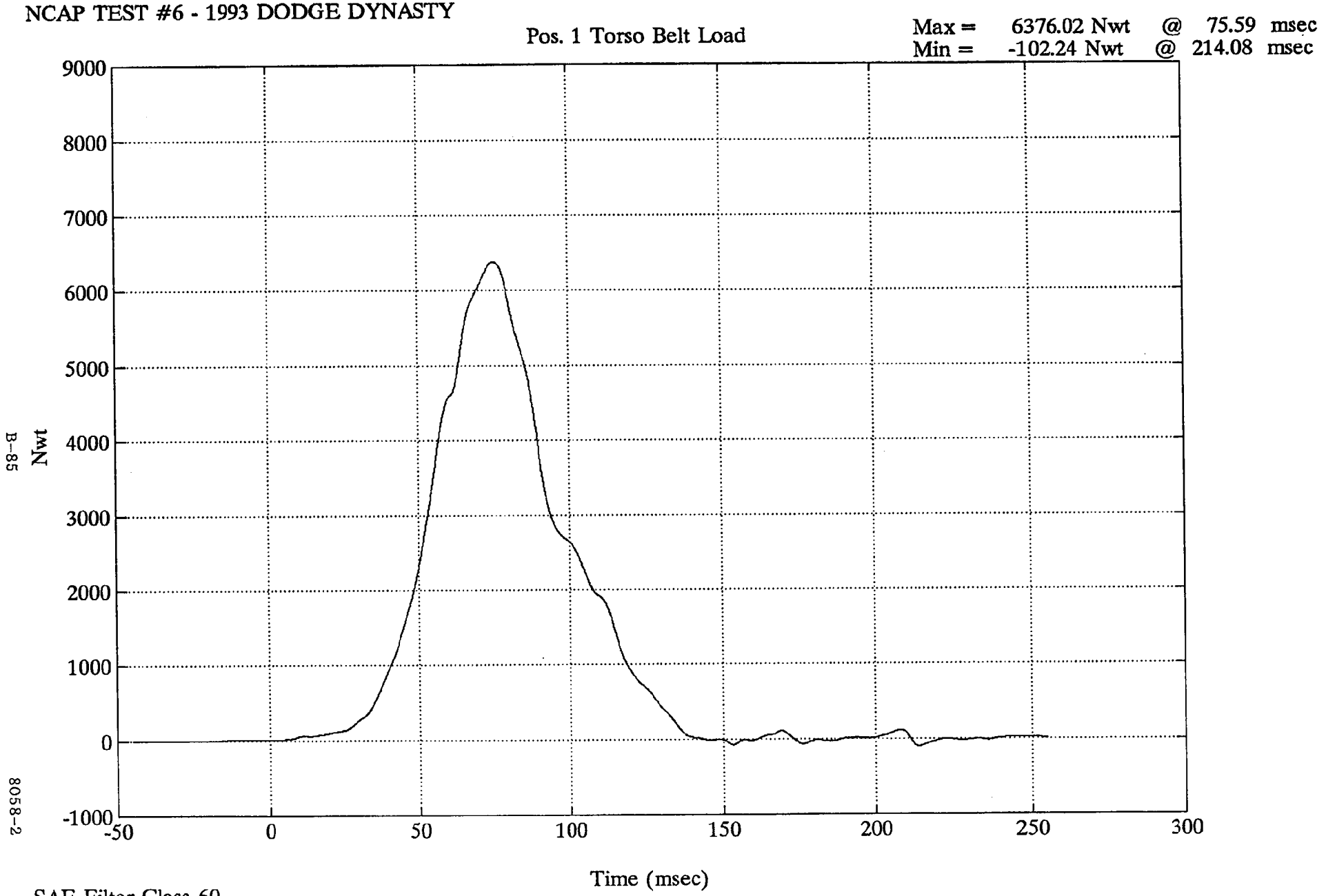
SAE Filter Class 600

NCAP TEST #6 - 1993 DODGE DYNASTY



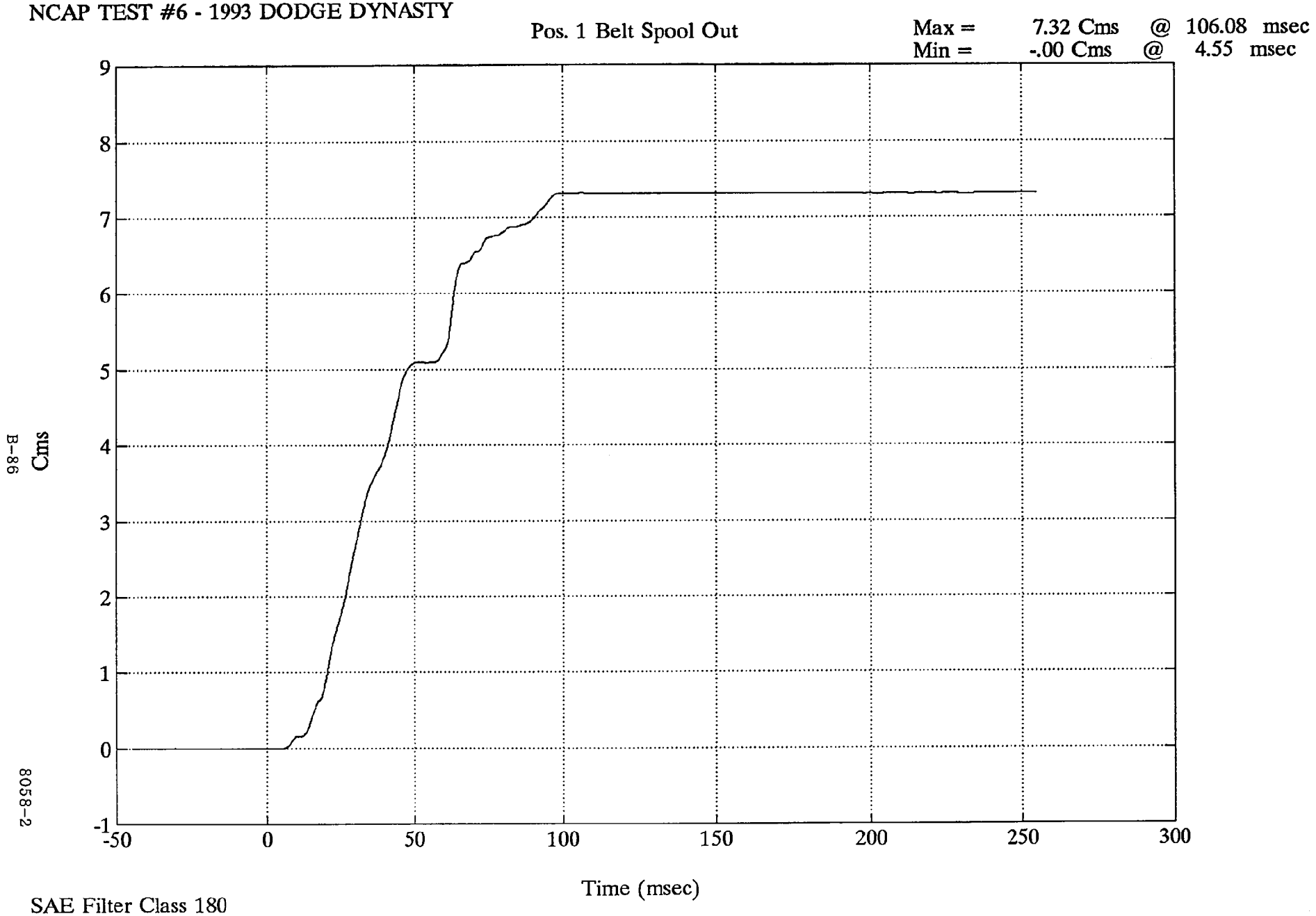
SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY



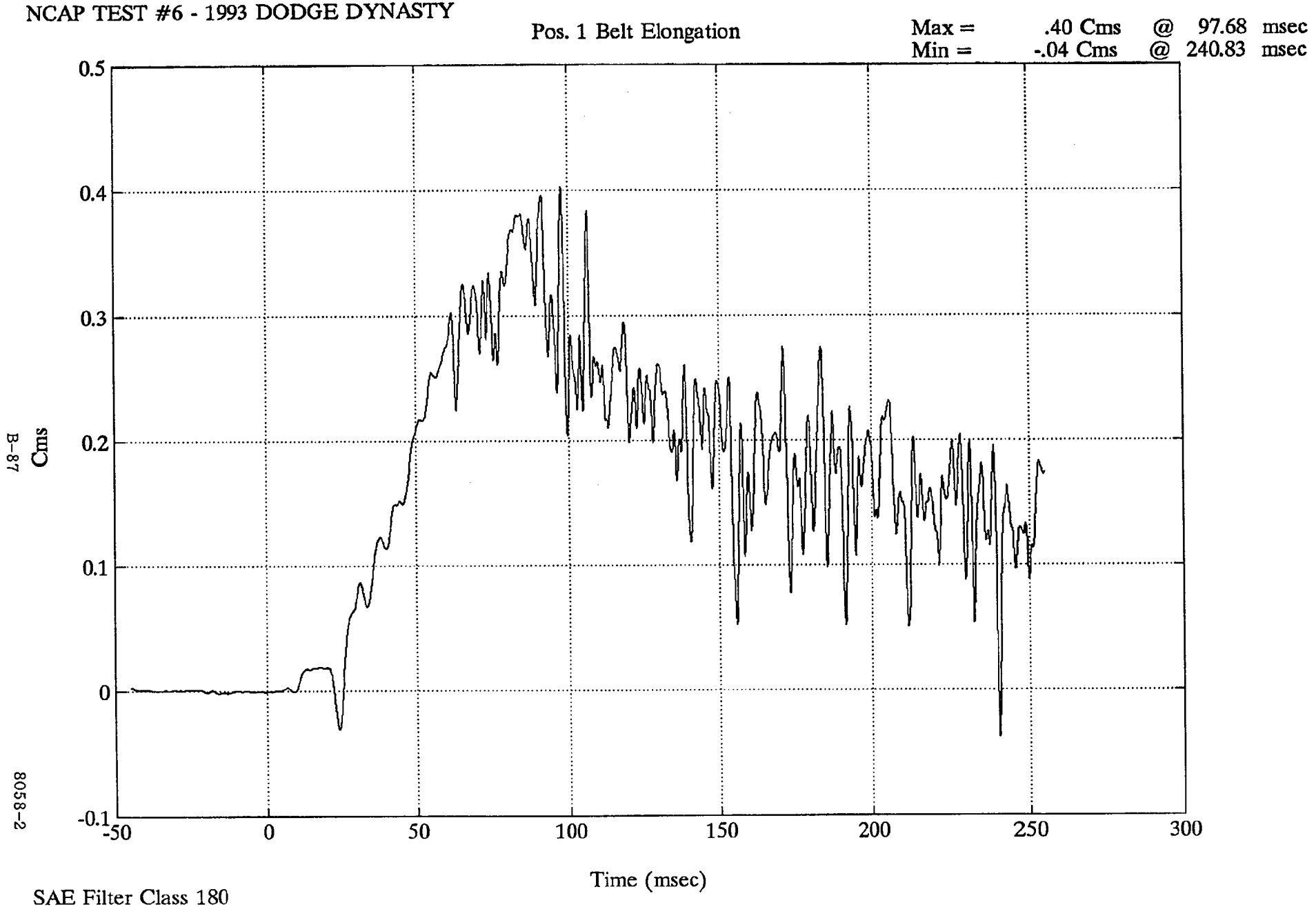
SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 180

NCAP TEST #6 - 1993 DODGE DYNASTY



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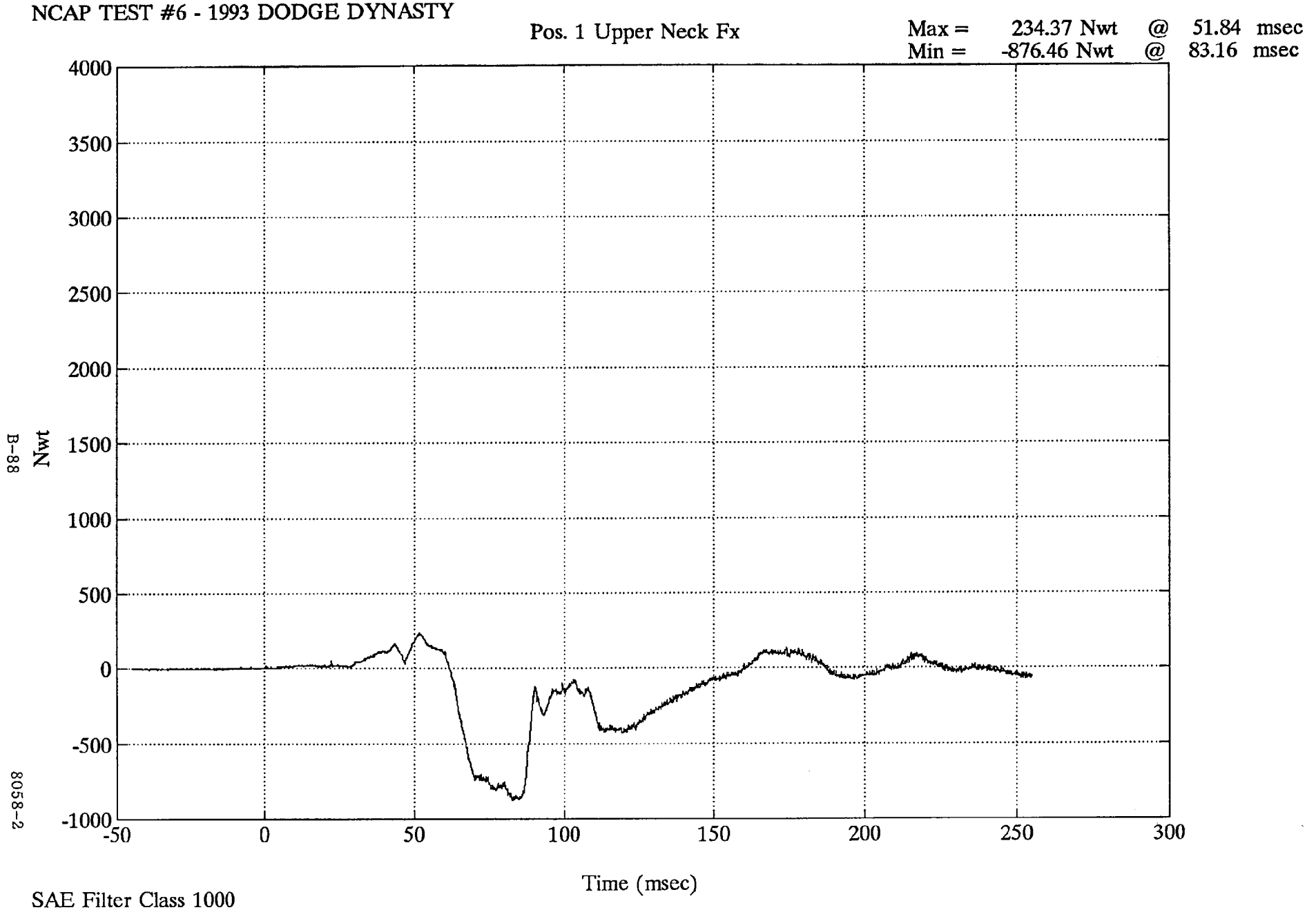
8058-2

SAE Filter Class 180

NCAP TEST #6 - 1993 DODGE DYNASTY

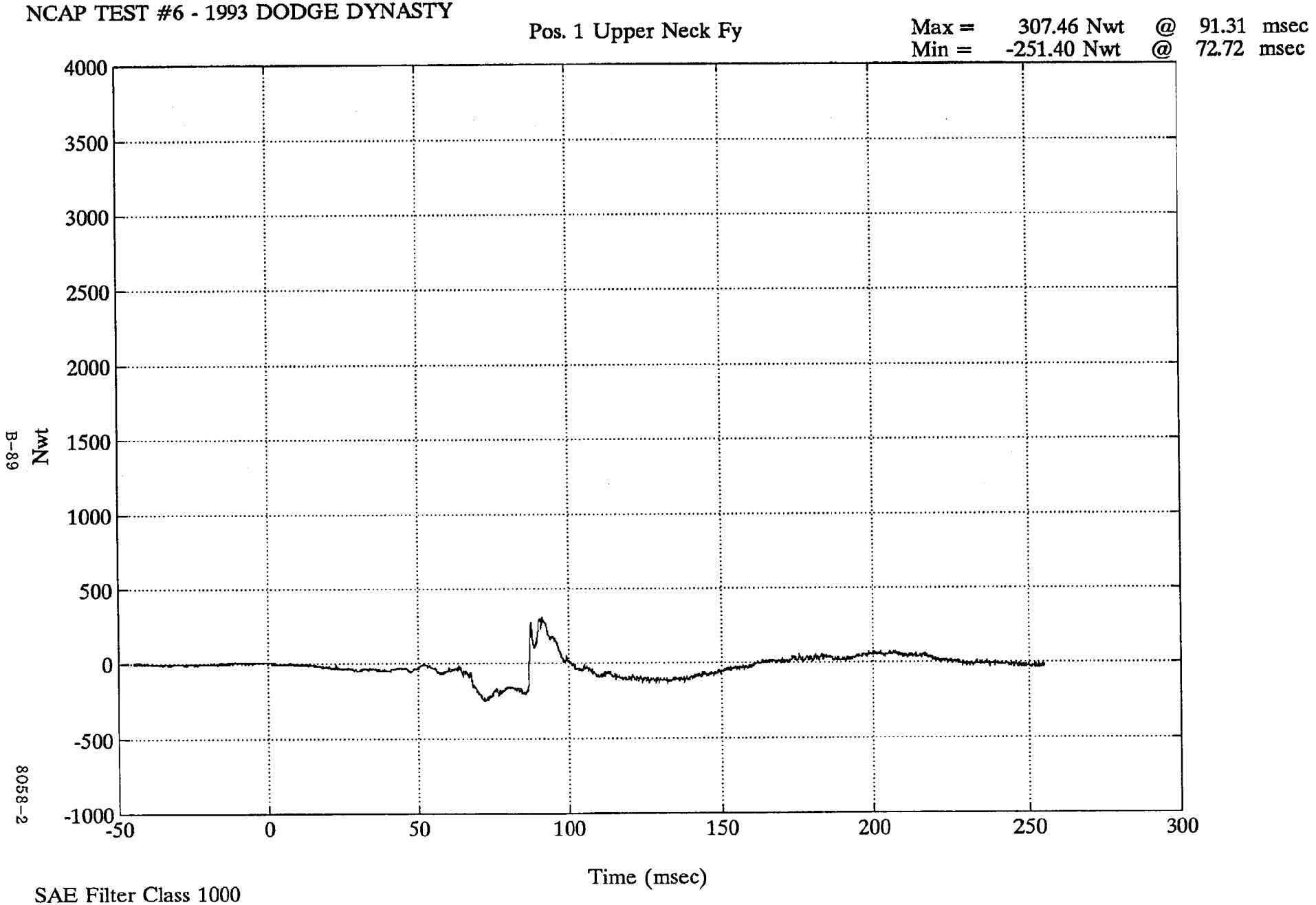


B-88

8058-2

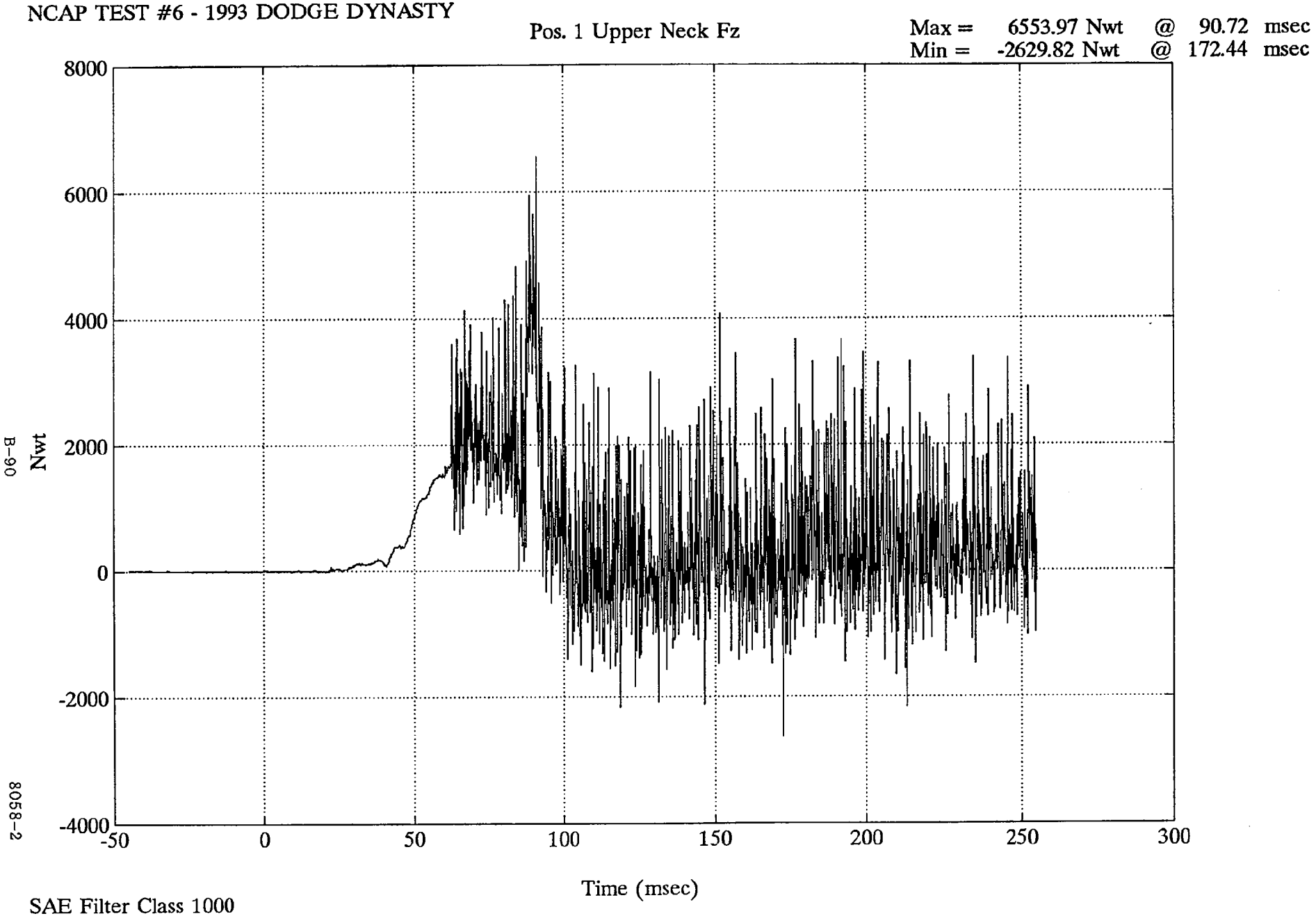
SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY



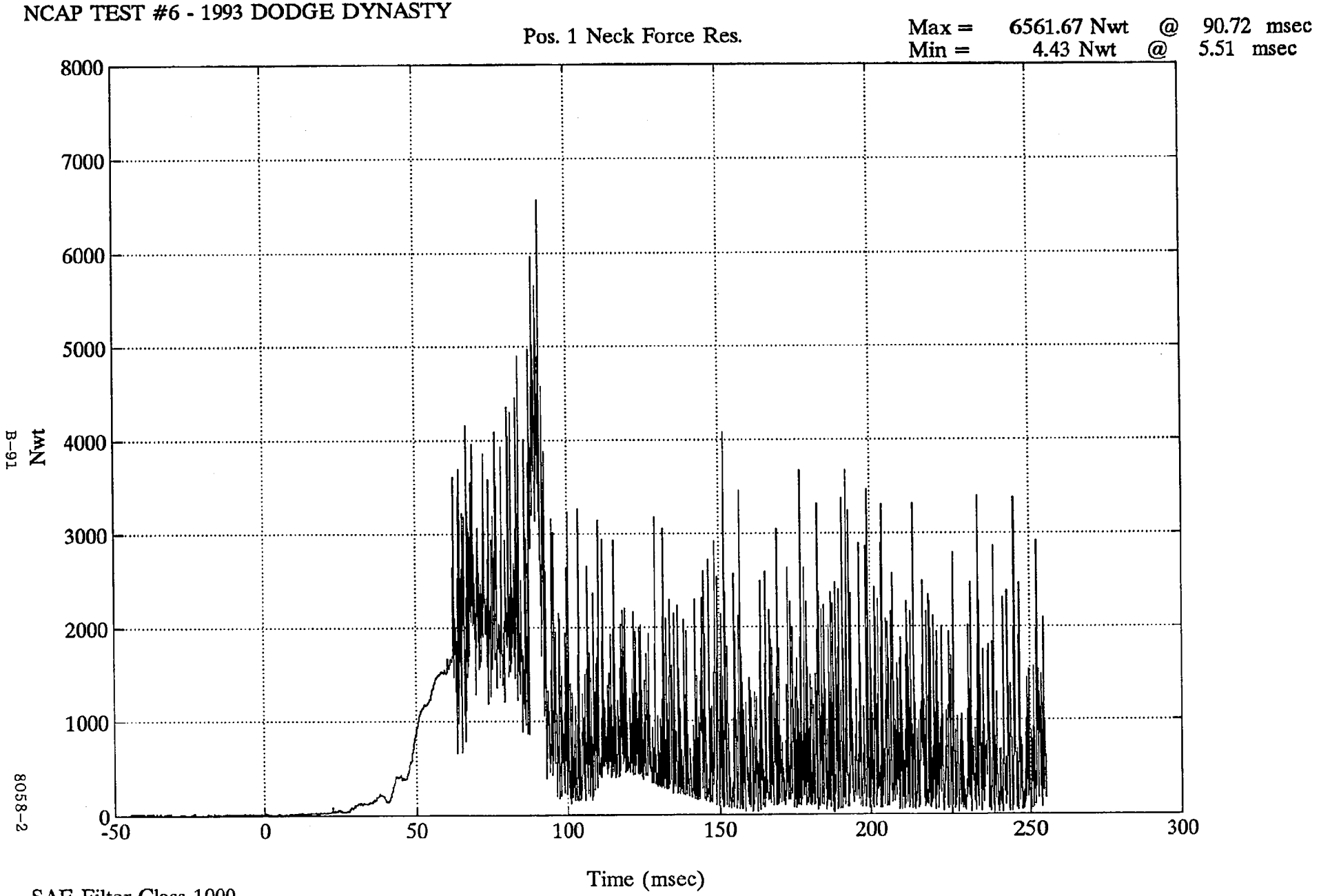
SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY

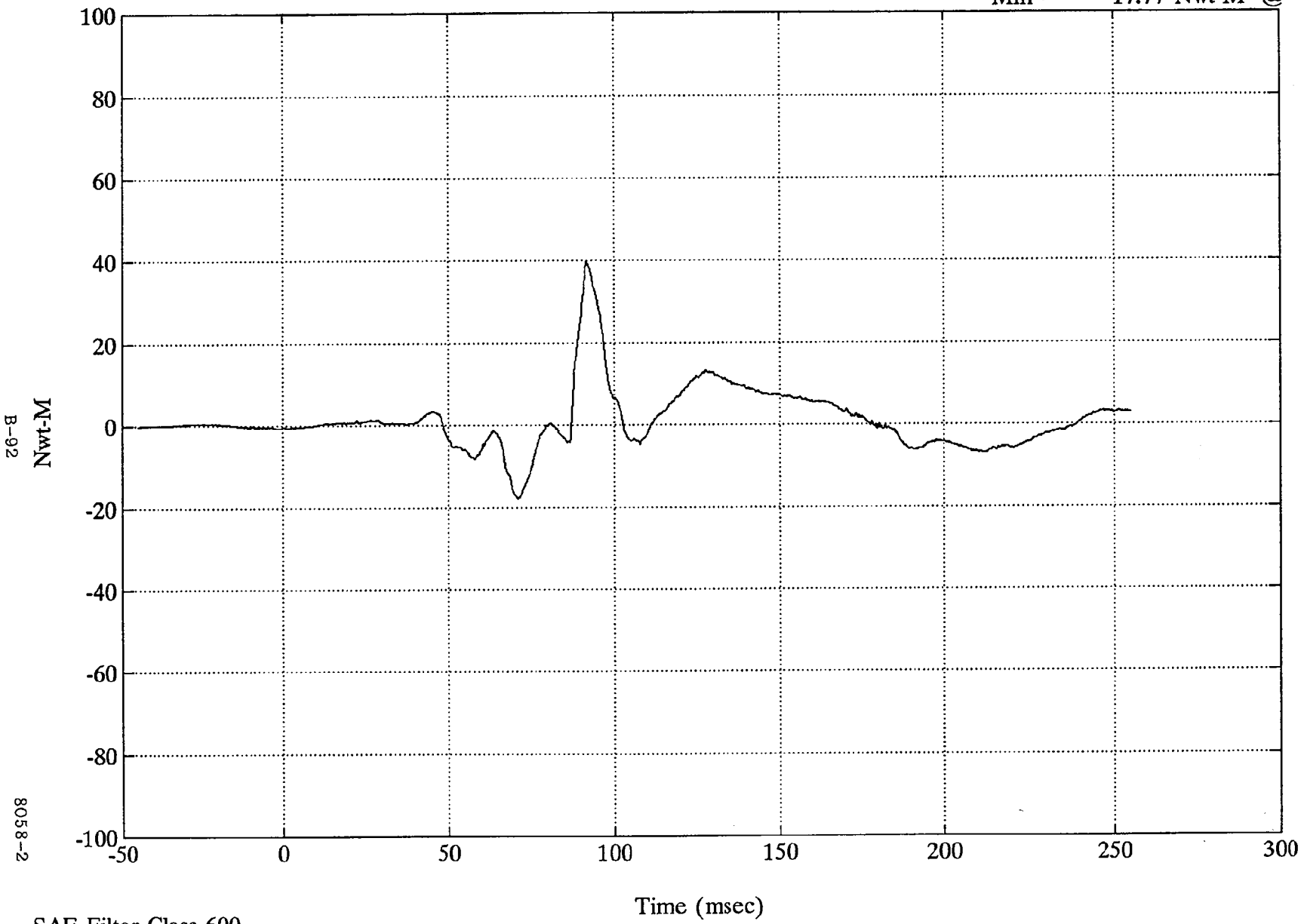


SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 1 Upper Neck Mx

Max = 39.88 Nwt-M @ 91.55 msec
Min = -17.77 Nwt-M @ 70.79 msec



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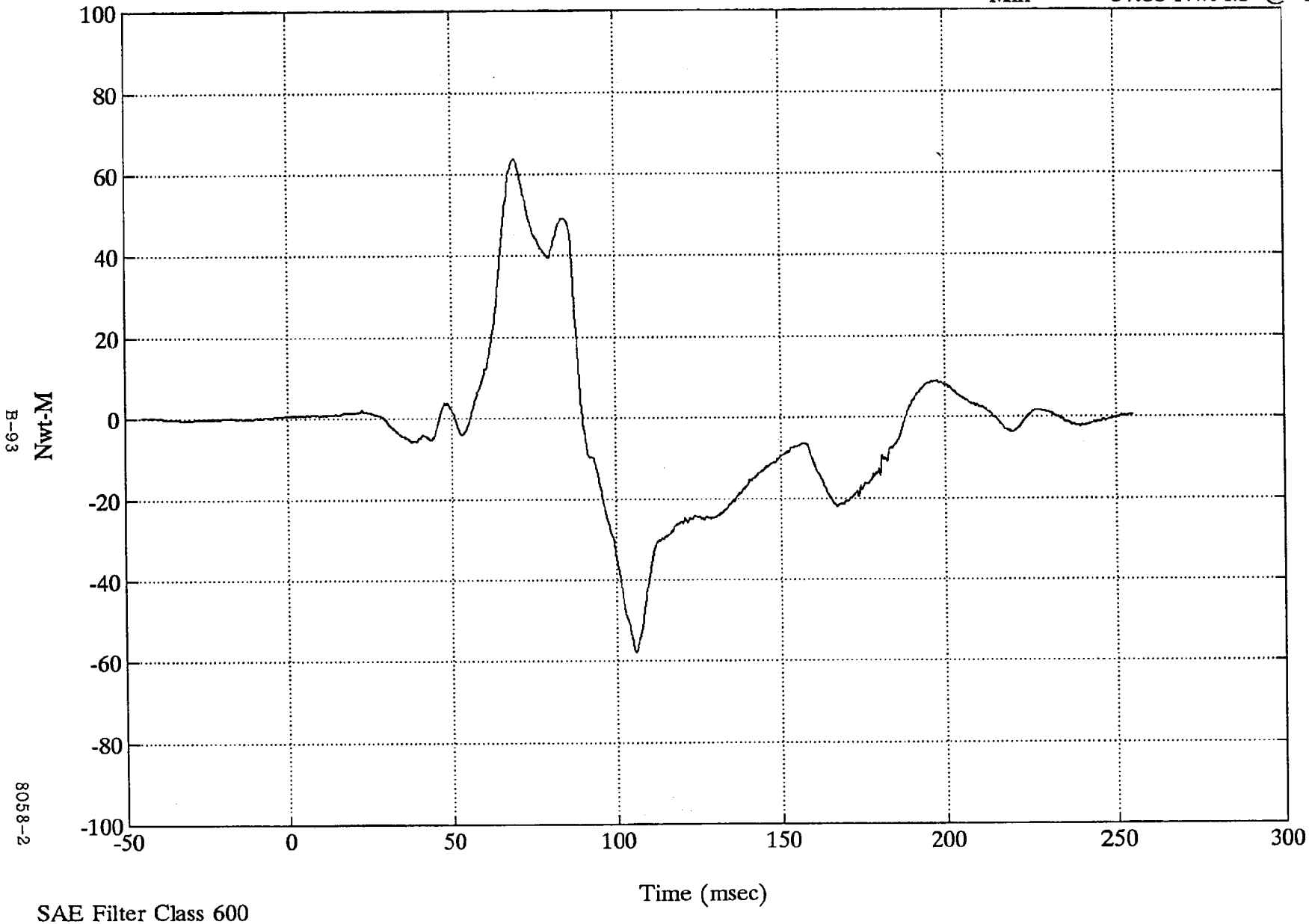
8058-2

SAE Filter Class 600

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 1 Upper Neck My

Max = 63.76 Nwt-M @ 69.59 msec
Min = -57.88 Nwt-M @ 105.72 msec

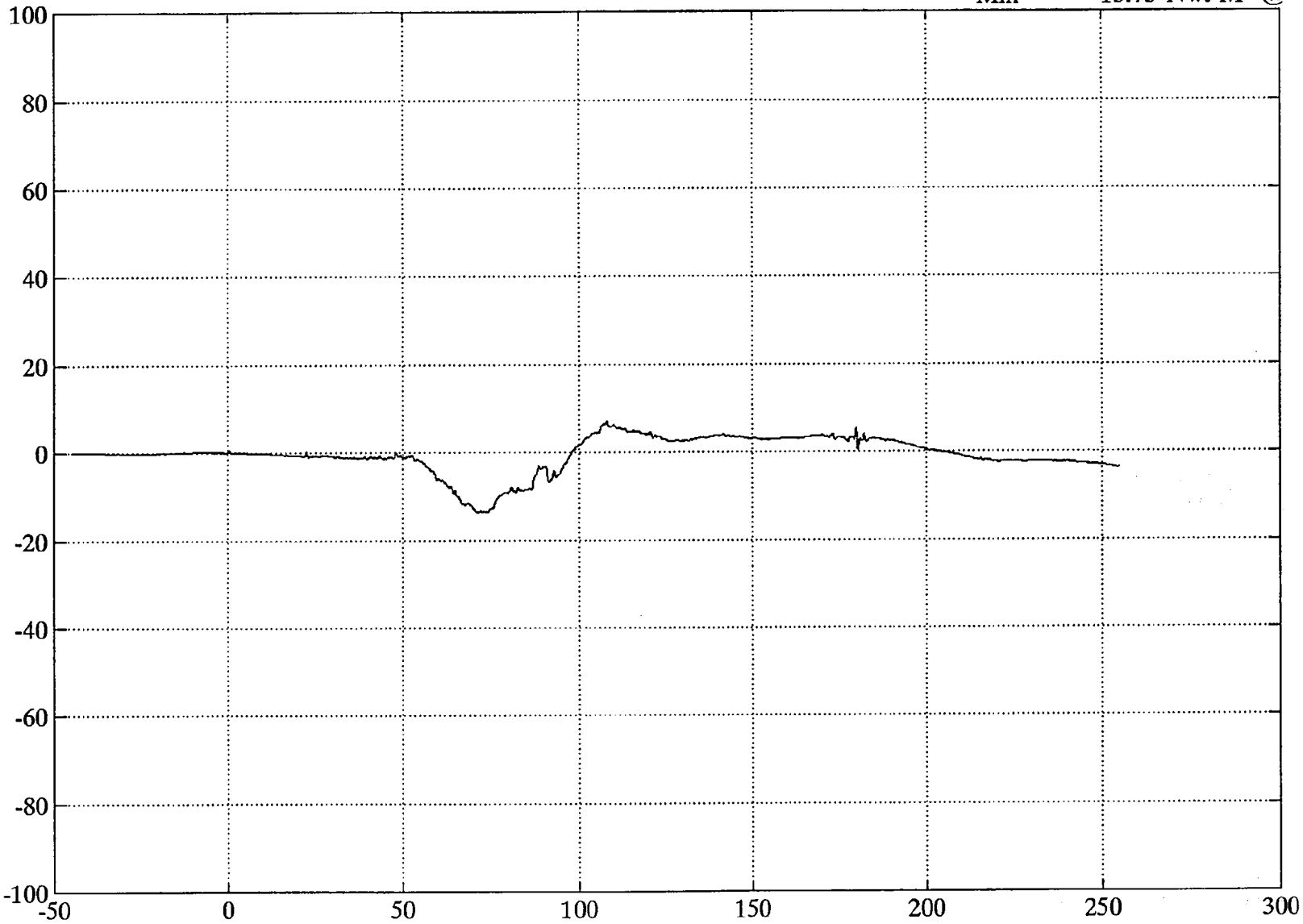


SAE Filter Class 600

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 1 Upper Neck Mz

Max = 6.90 Nwt-M @ 107.88 msec
Min = -13.73 Nwt-M @ 71.40 msec



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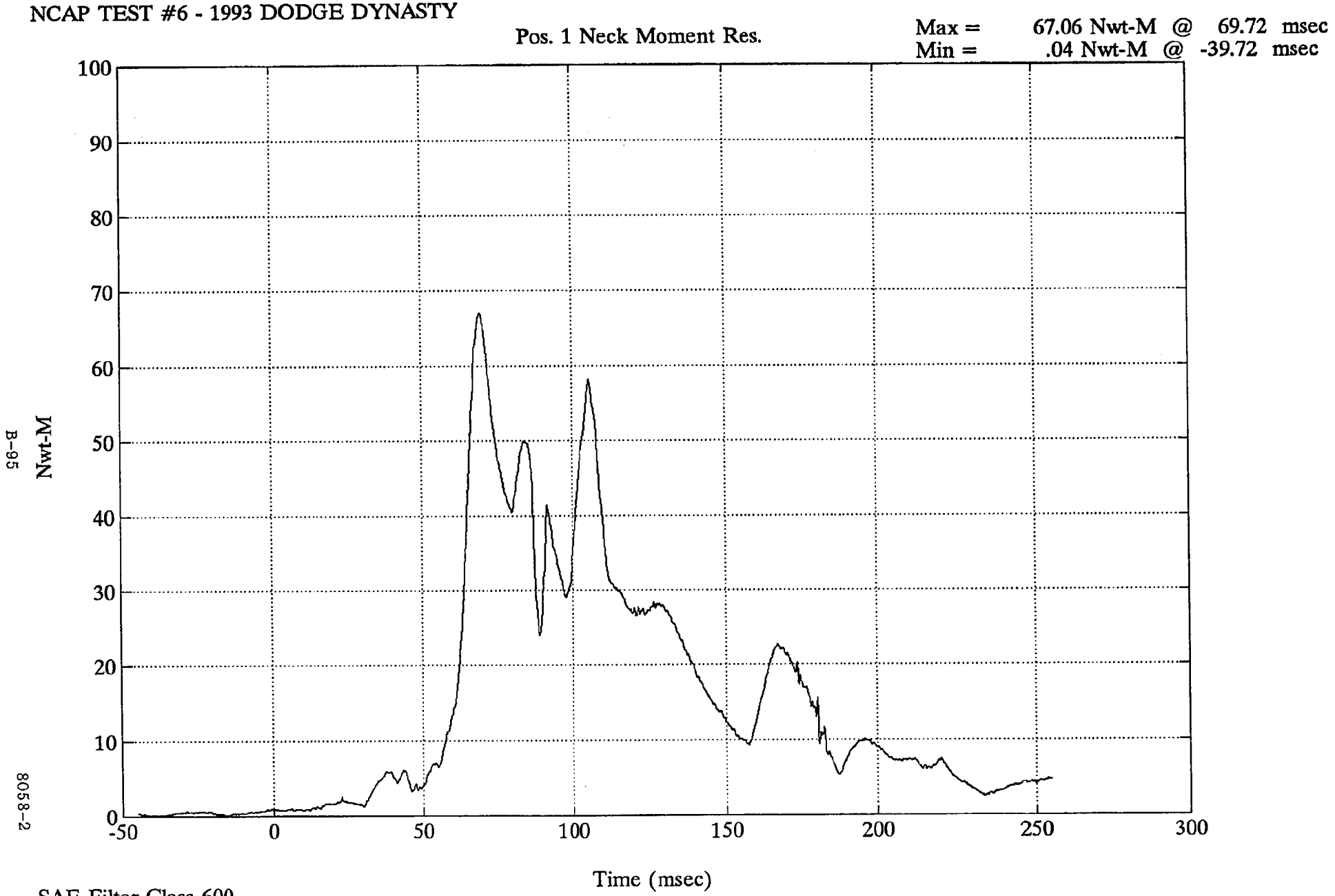
8058-2

SAE Filter Class 600

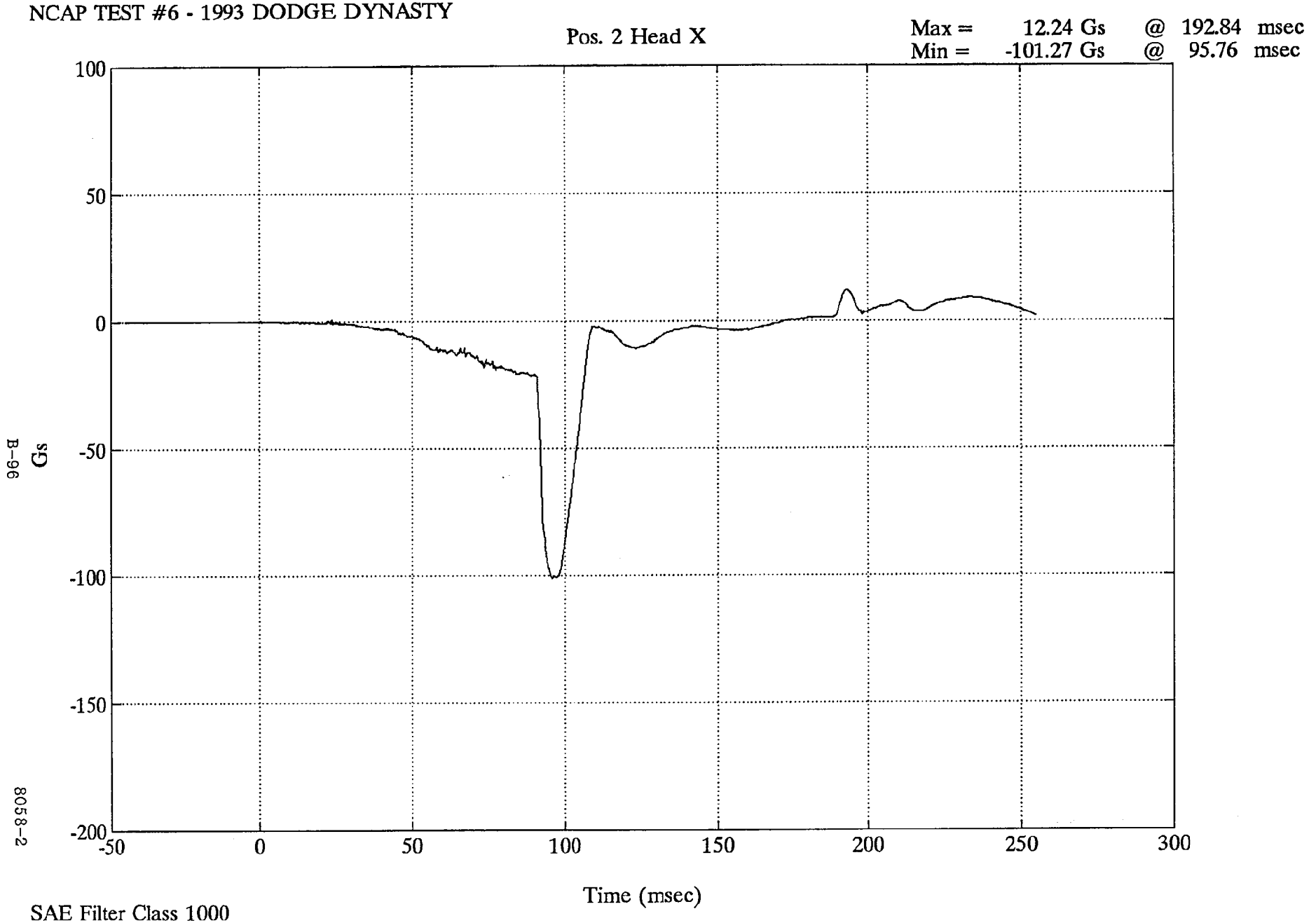
NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 600

8058-2

NCAP TEST #6 - 1993 DODGE DYNASTY

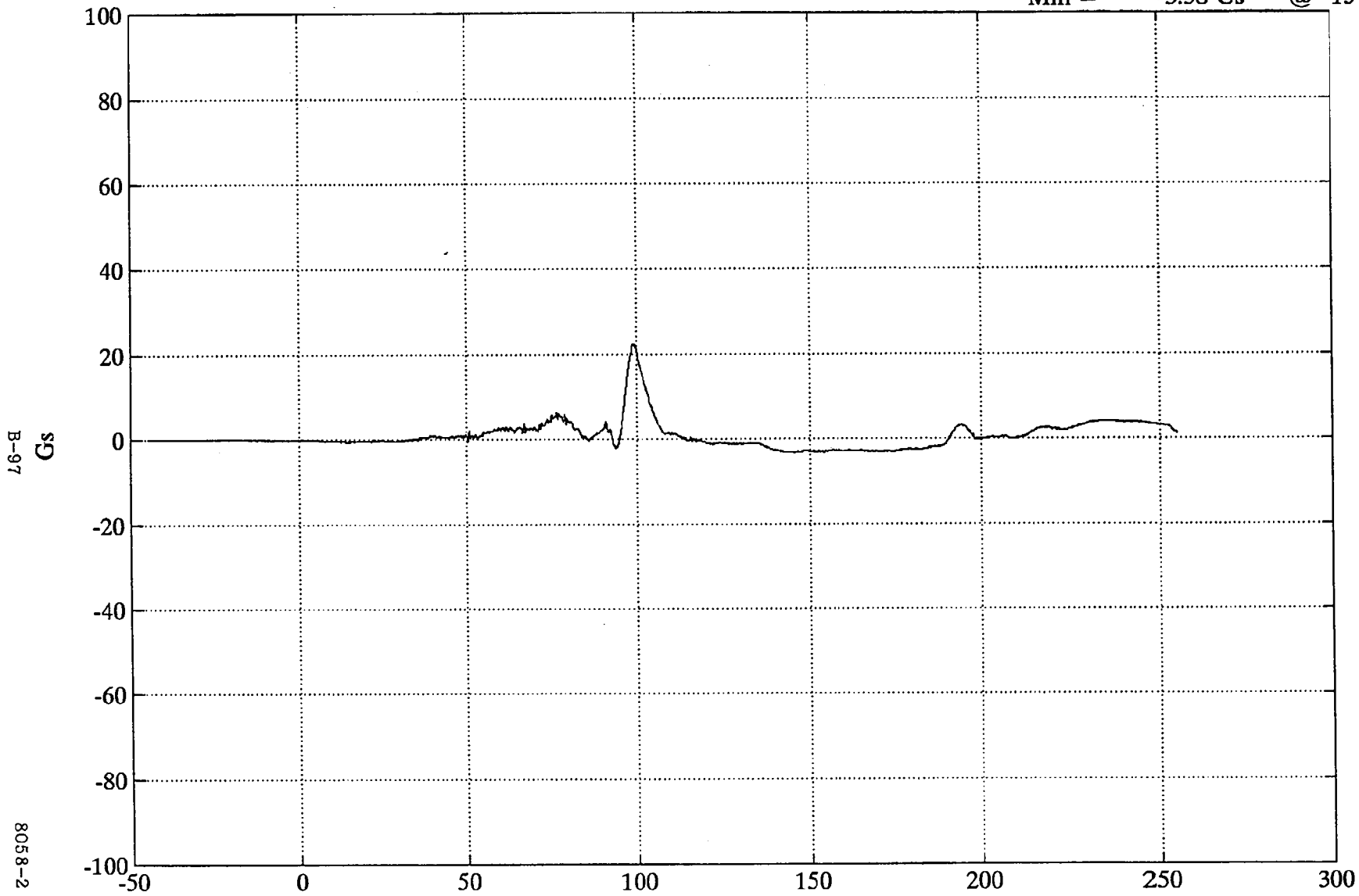


SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 2 Head Y

Max = 22.34 Gs @ 99.24 msec
Min = -3.38 Gs @ 154.19 msec



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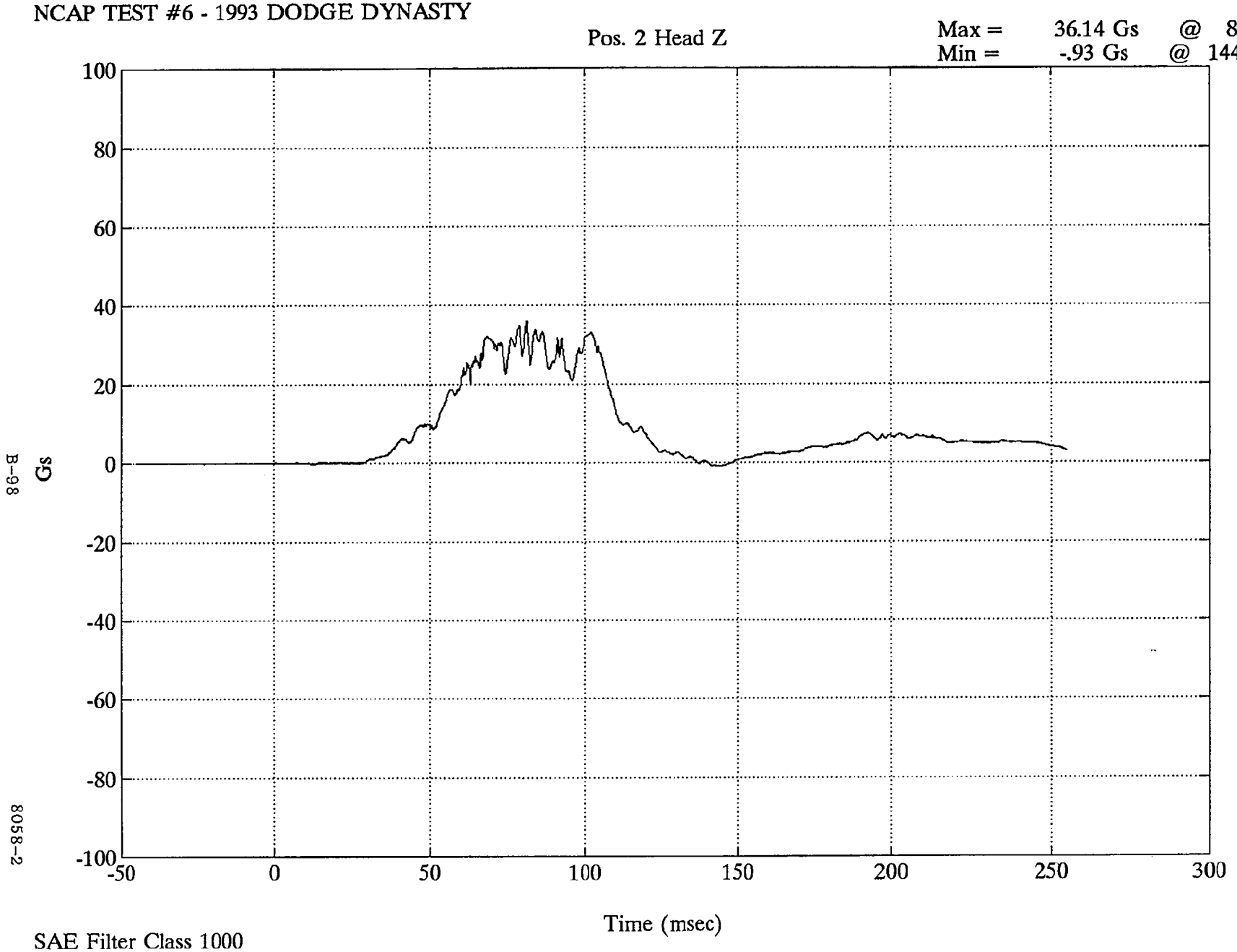
8058-2

SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY

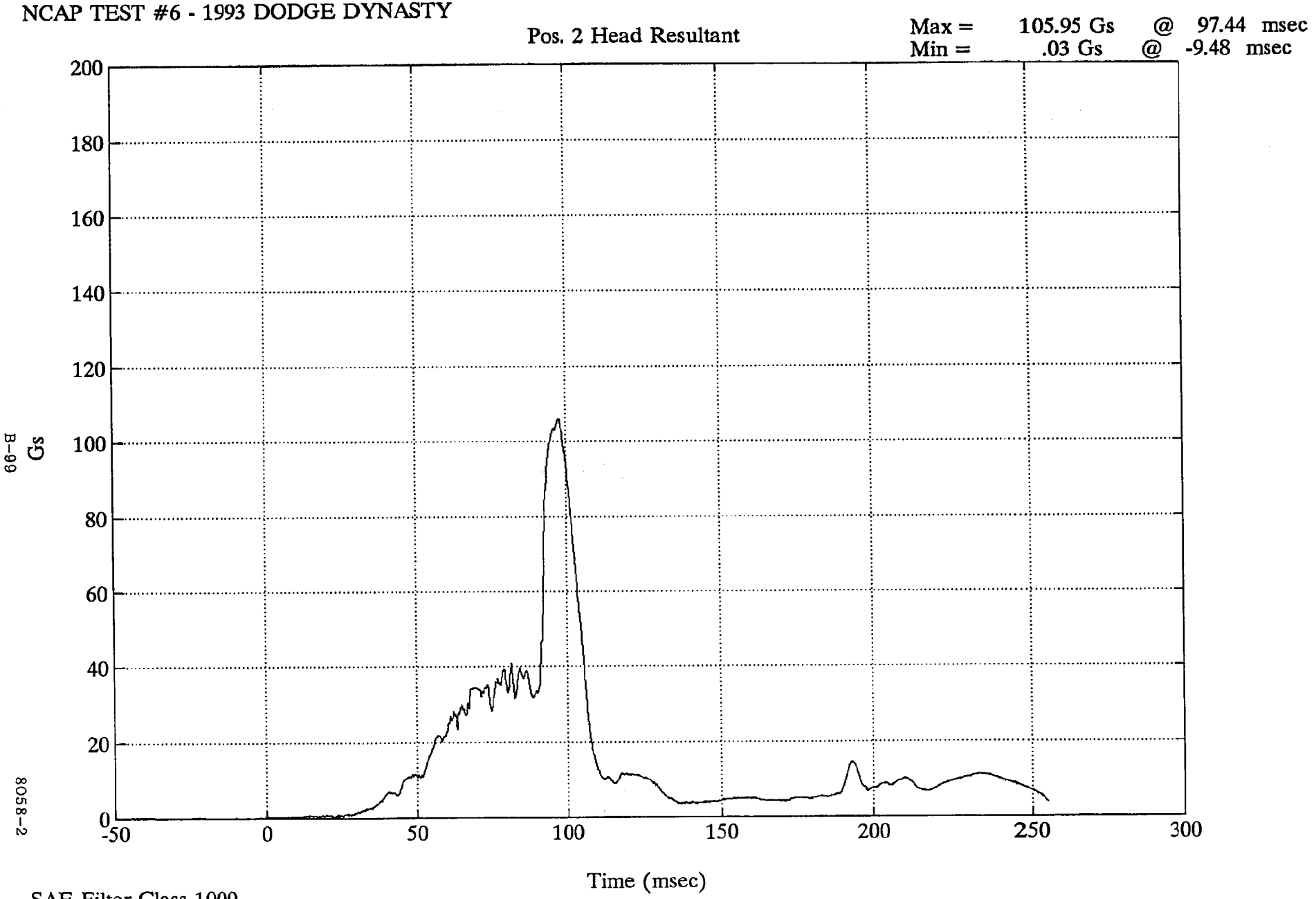


B-98

8058-2

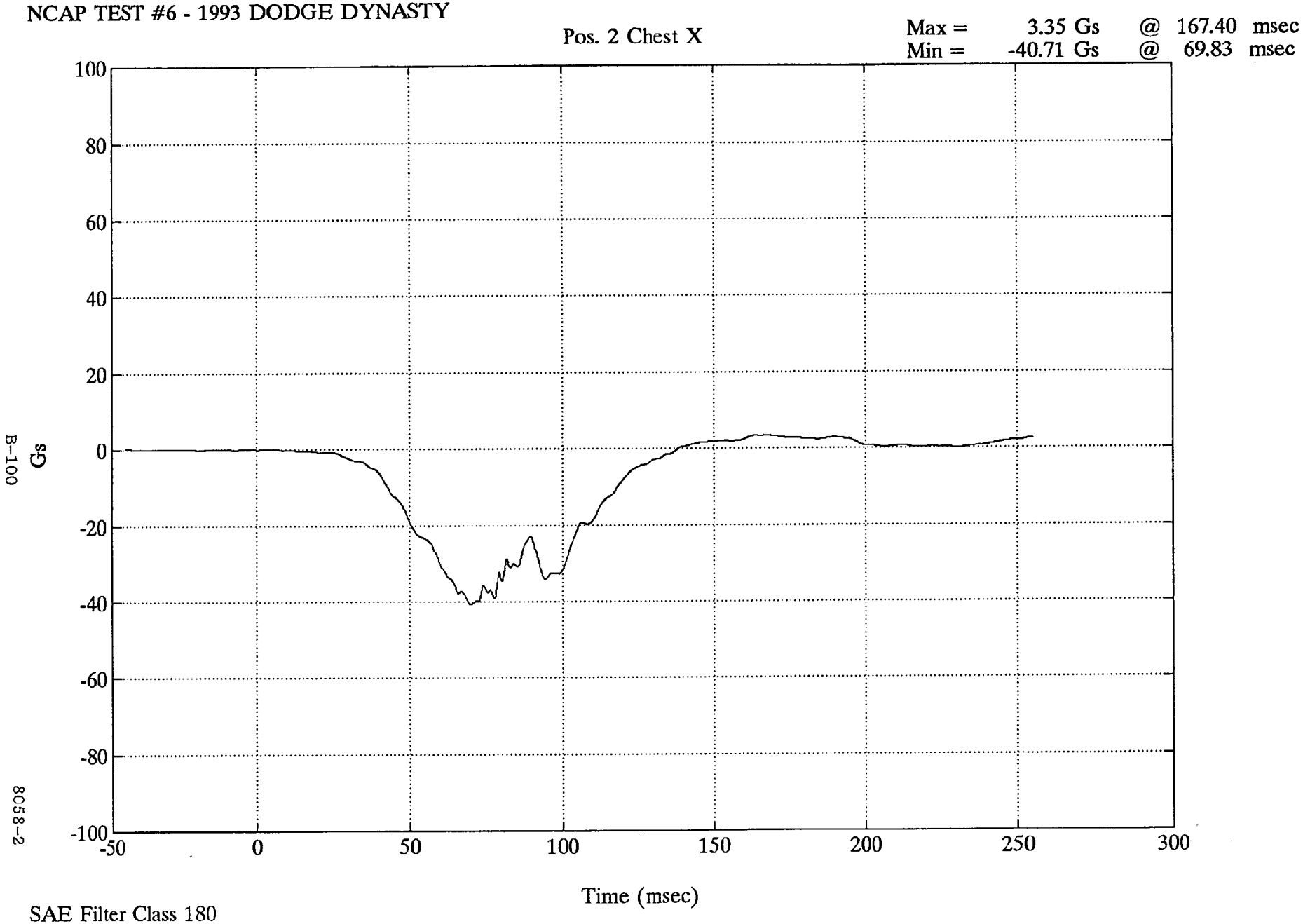
SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY

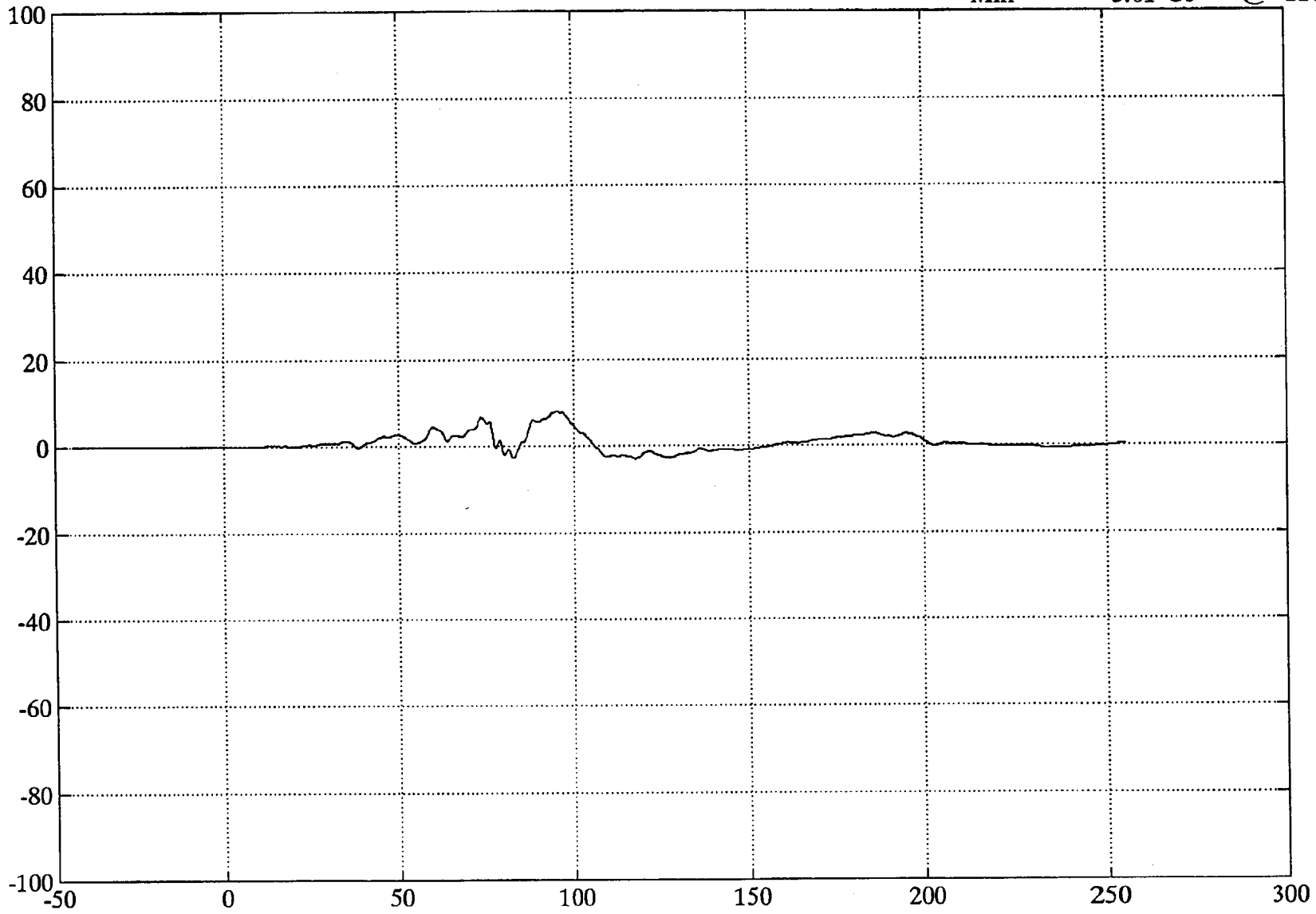


SAE Filter Class 180

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 2 Chest Y

Max = 8.06 Gs @ 95.27 msec
Min = -3.01 Gs @ 117.59 msec

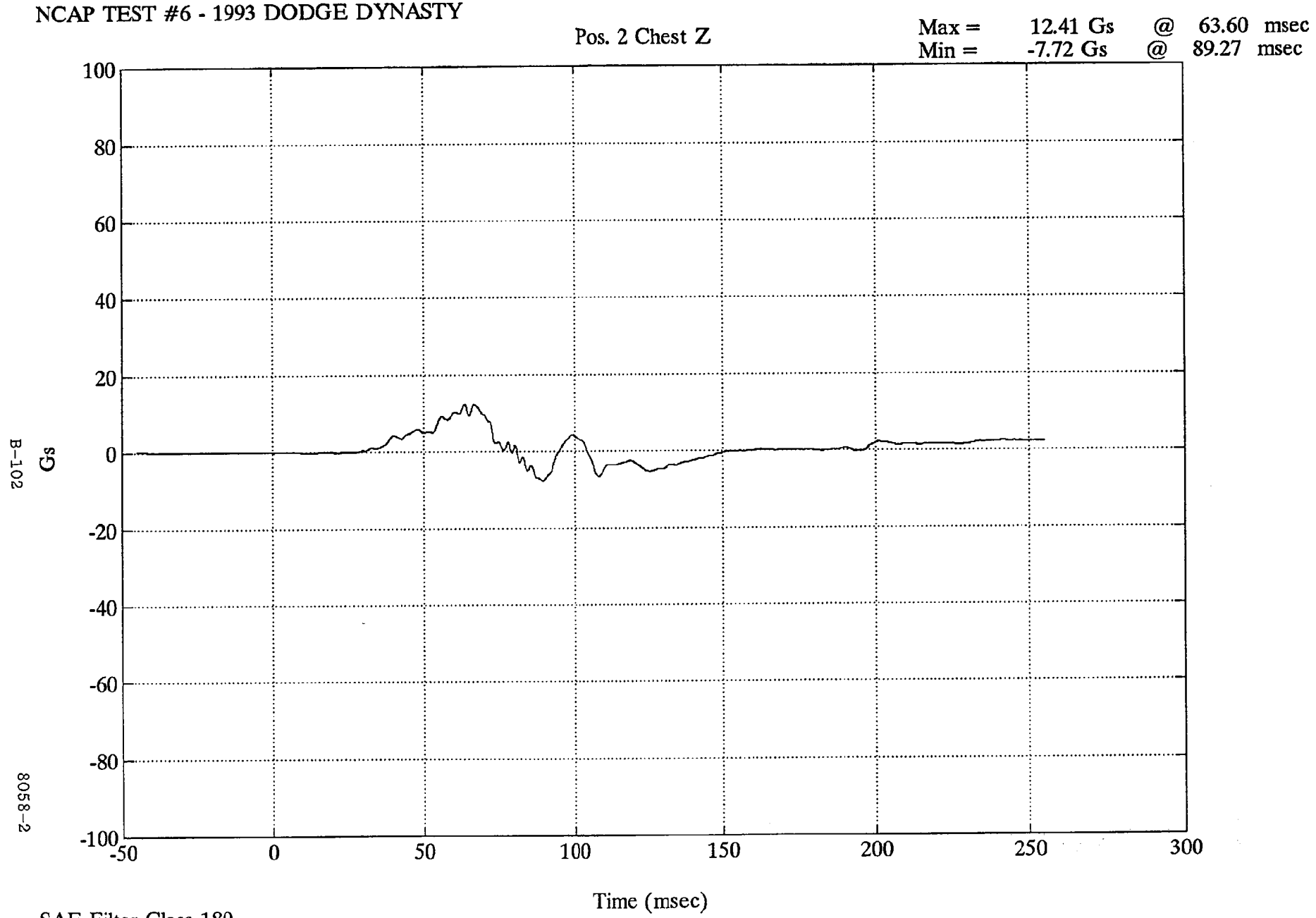


B-101

8058-2

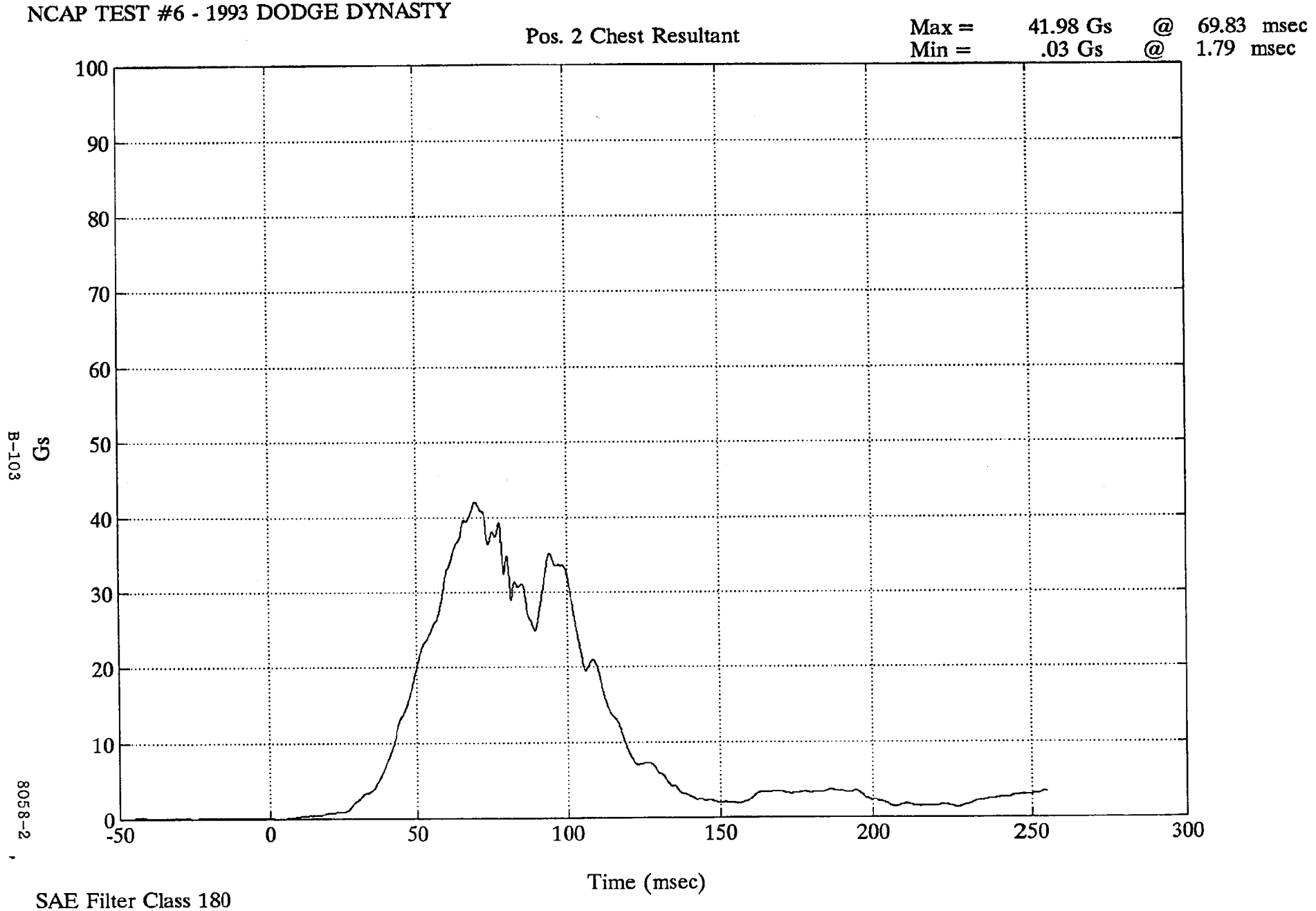
SAE Filter Class 180

NCAP TEST #6 - 1993 DODGE DYNASTY



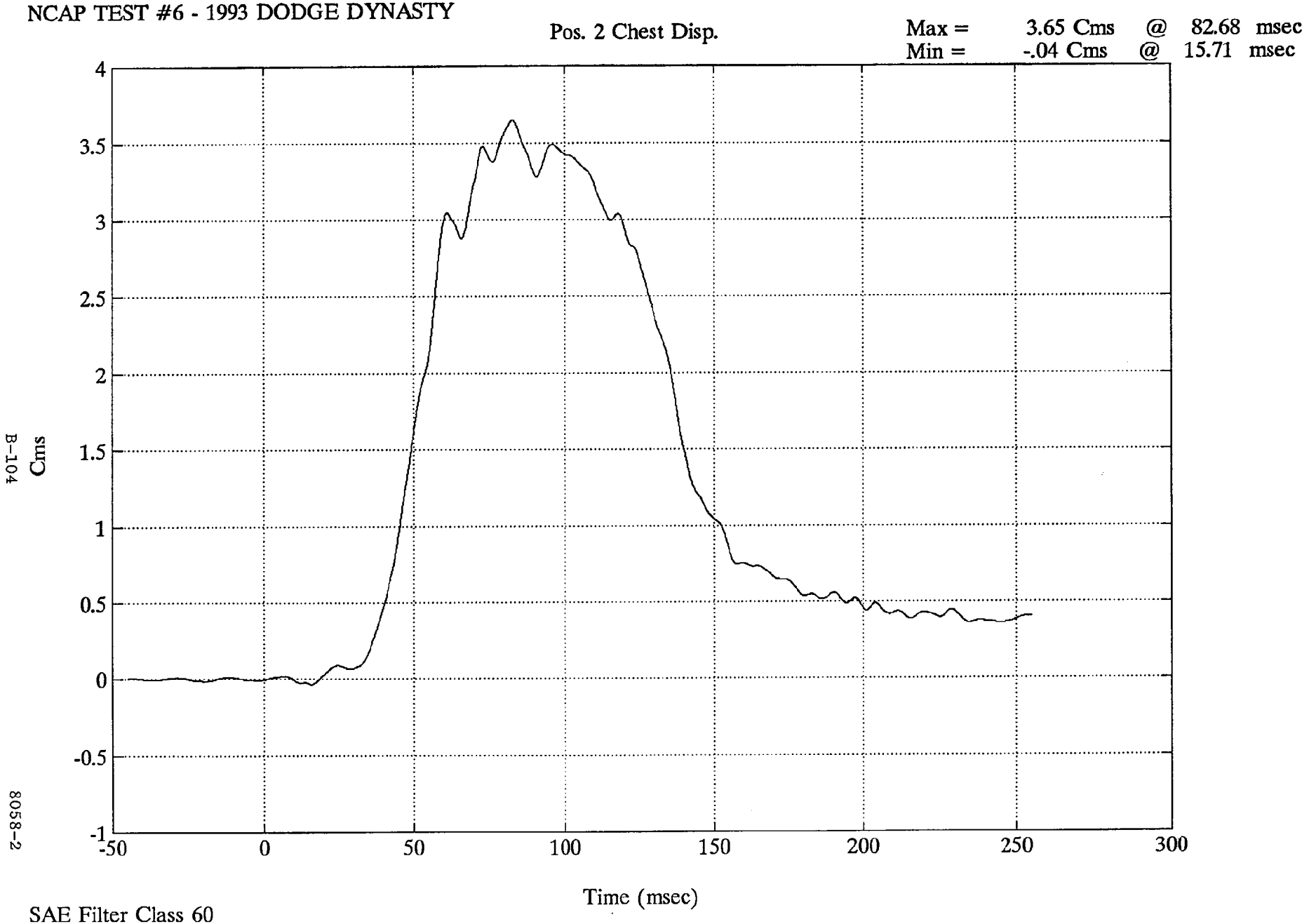
SAE Filter Class 180

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 180

NCAP TEST #6 - 1993 DODGE DYNASTY



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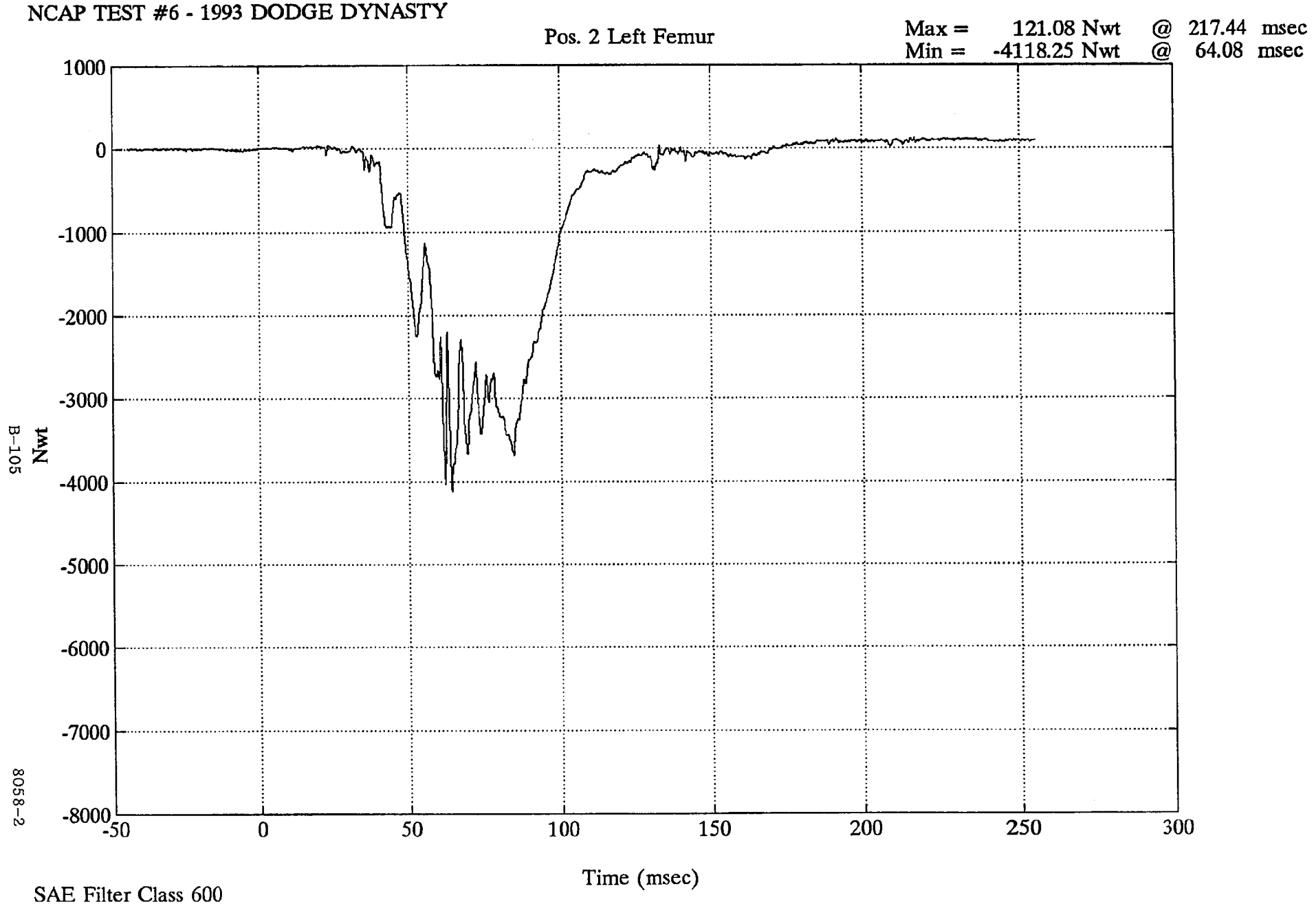
8058-2

SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY



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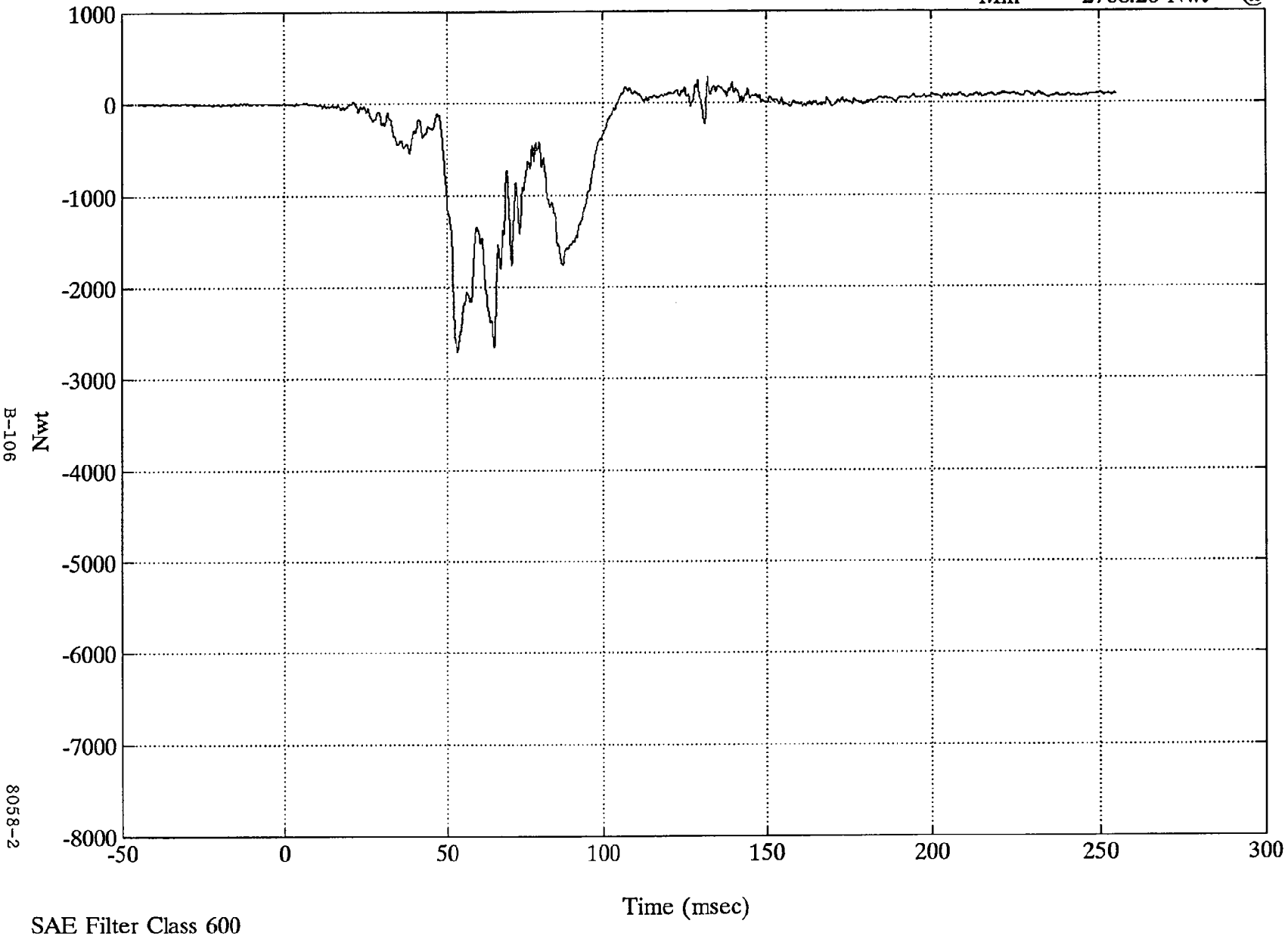
8058-2

SAE Filter Class 600

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 2 Right Femur

Max = 287.28 Nwt @ 132.23 msec
Min = -2708.26 Nwt @ 53.40 msec



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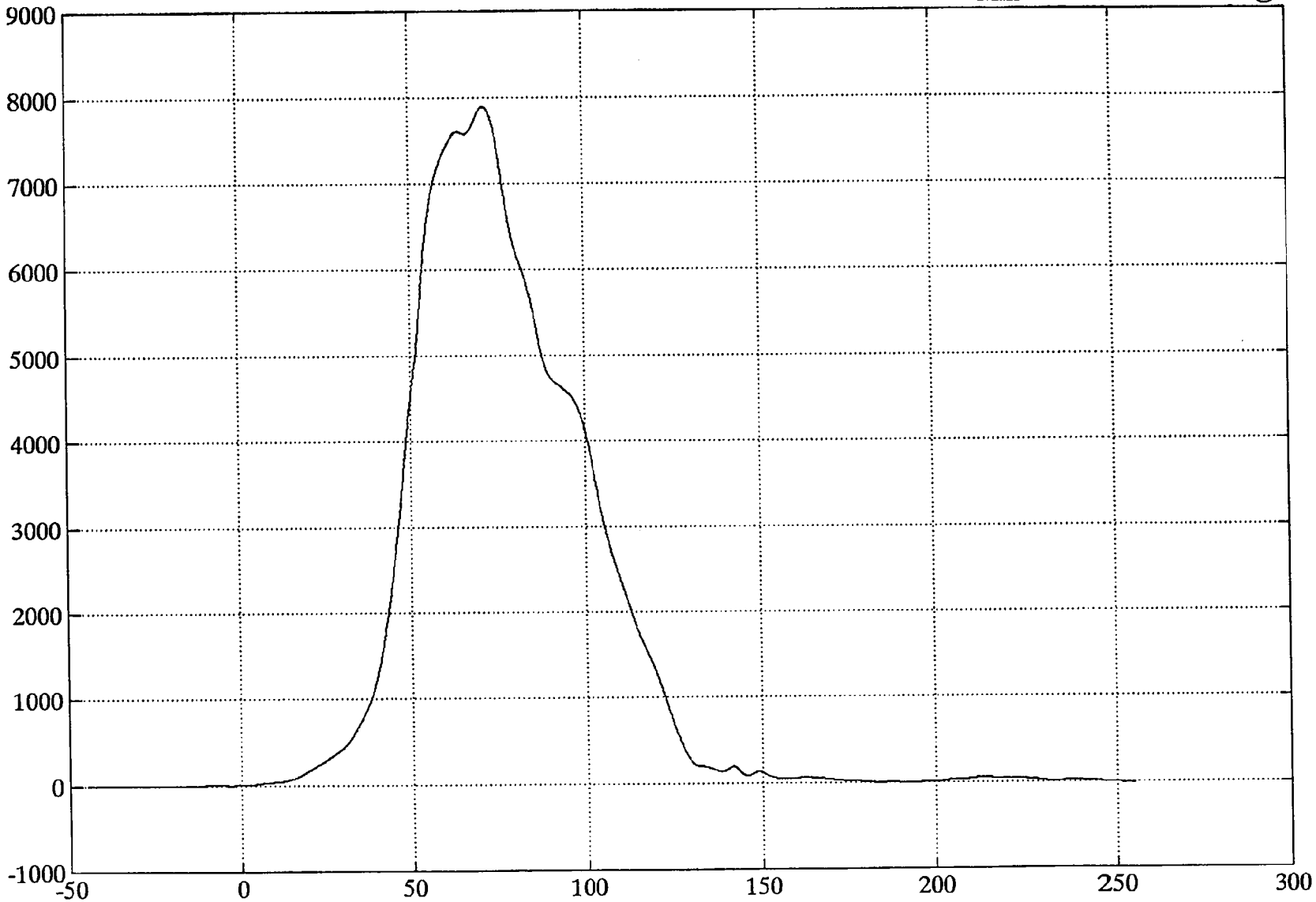
8058-2

SAE Filter Class 600

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 2 Right Belt Load

Max = 7888.89 Nwt @ 71.40 msec
Min = -14.13 Nwt @ 254.04 msec



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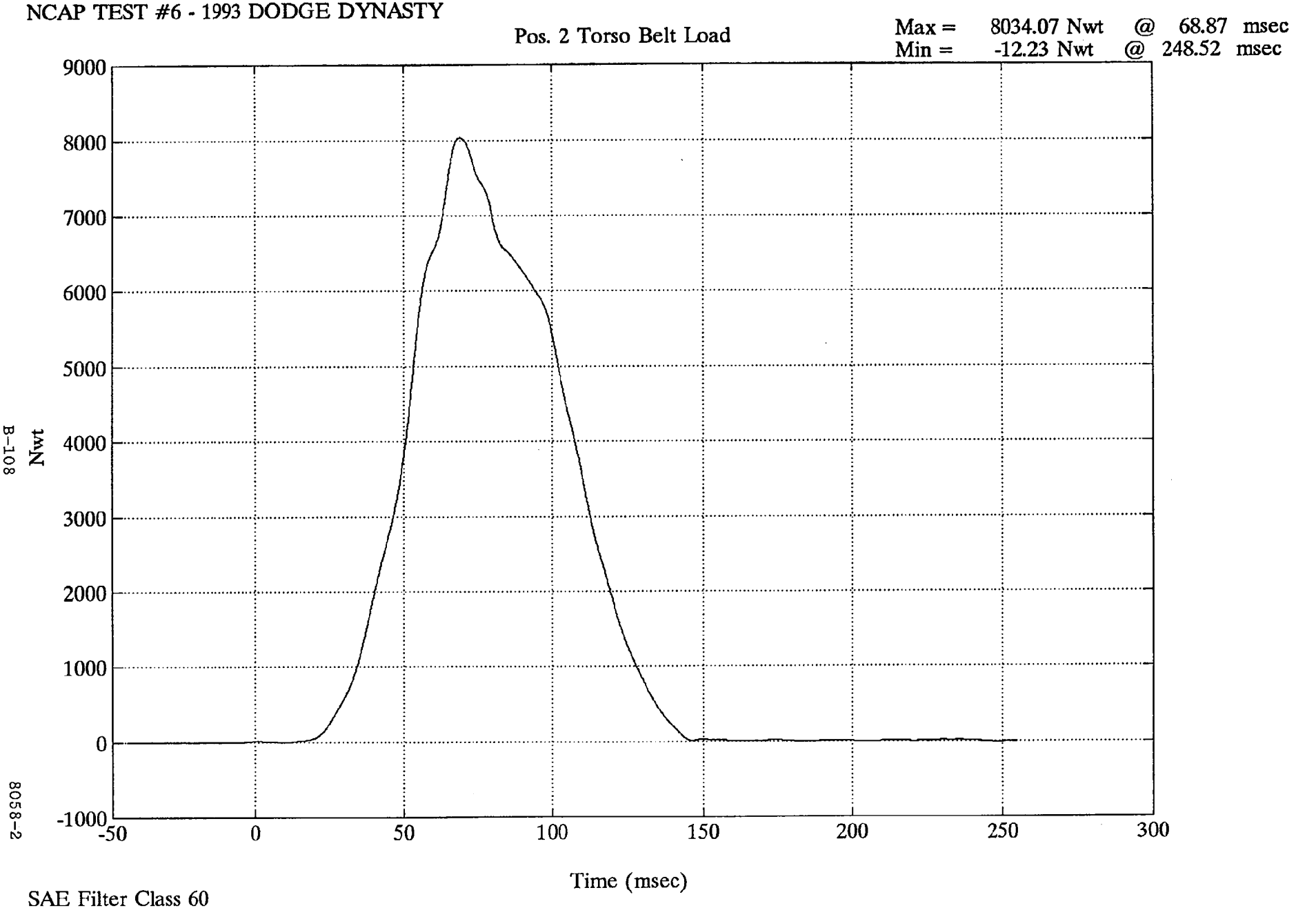
8058-2

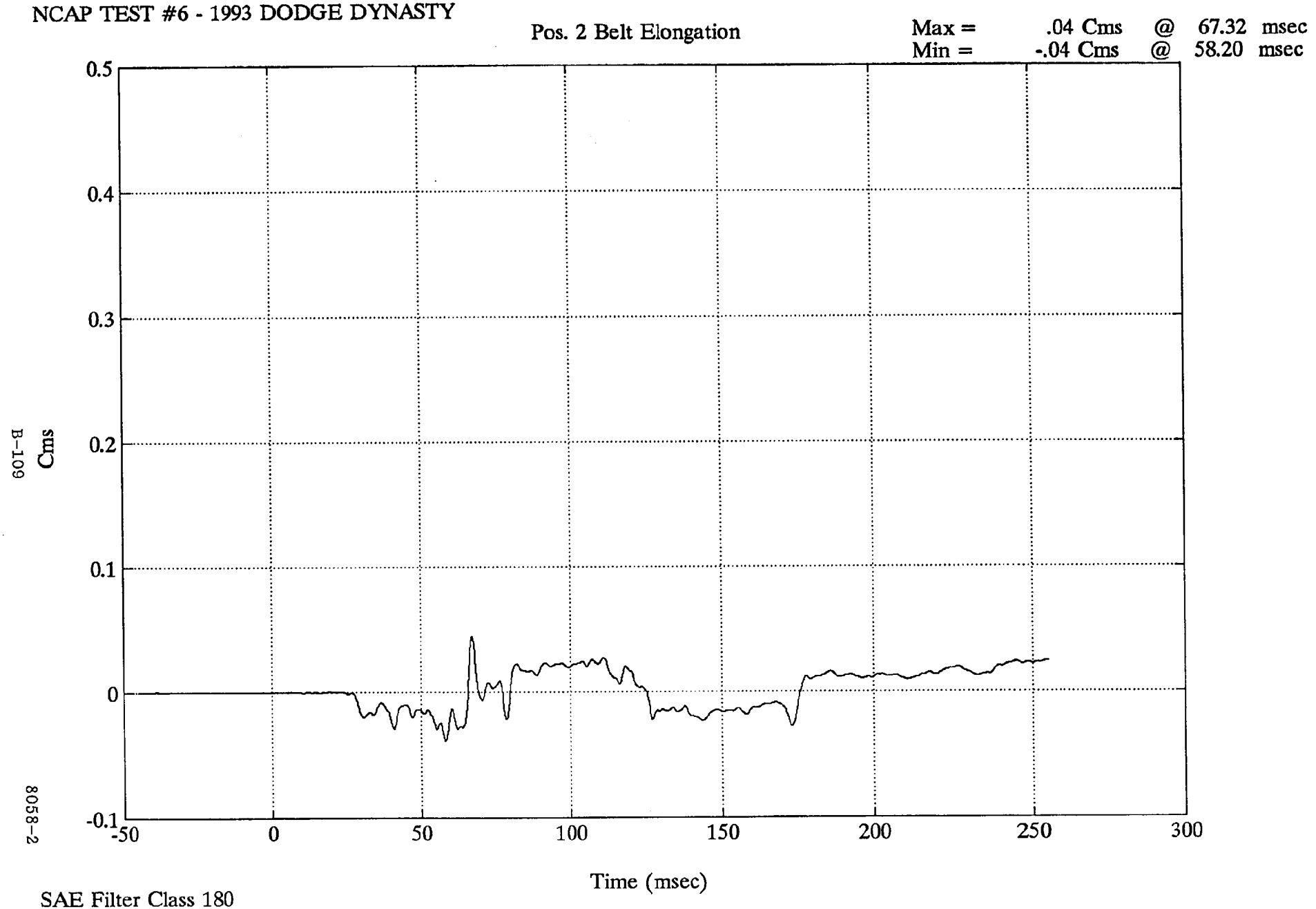
SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY



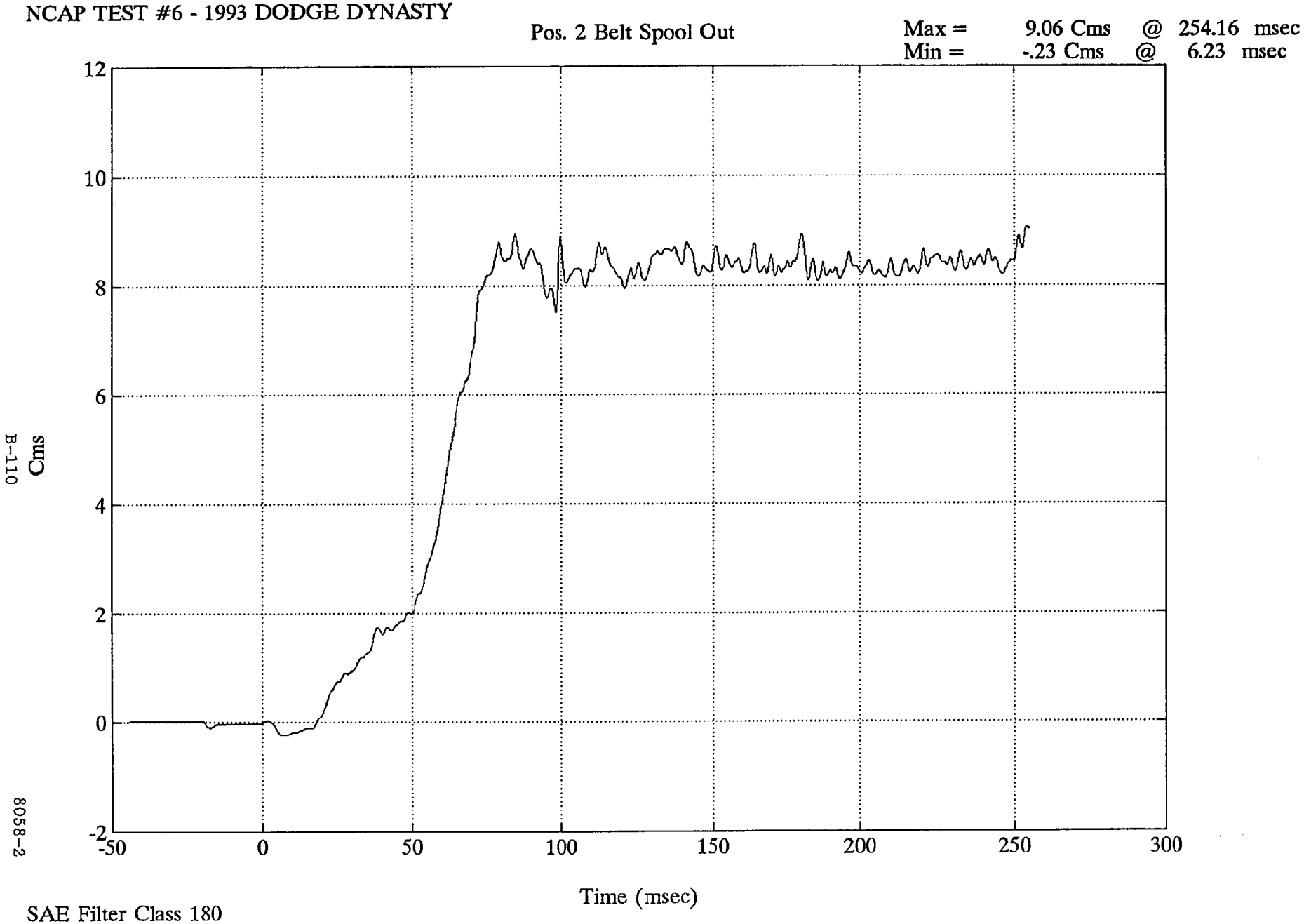
SAE Filter Class 60

NCAP TEST #6 - 1993 DODGE DYNASTY



SAE Filter Class 180

NCAP TEST #6 - 1993 DODGE DYNASTY

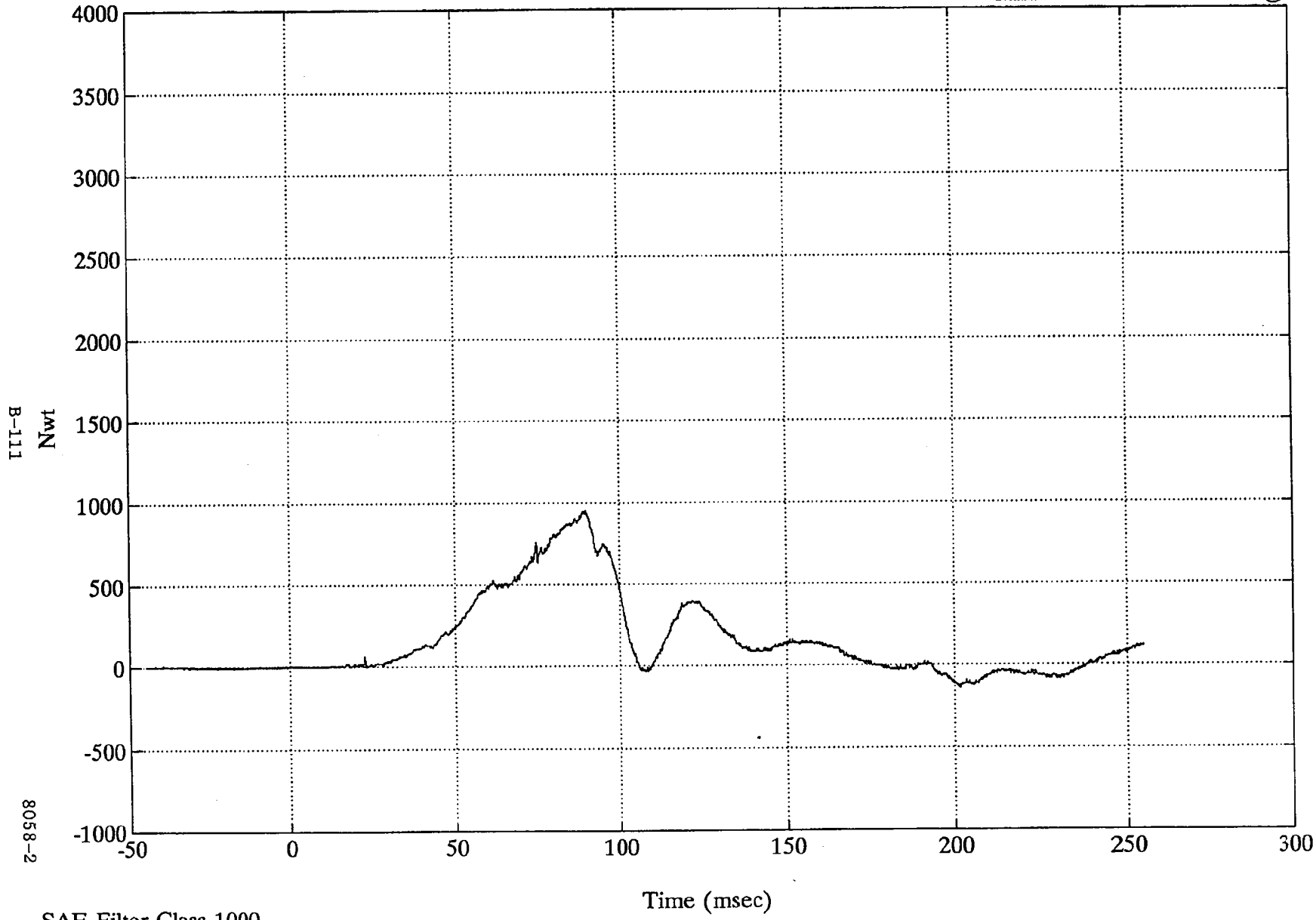


SAE Filter Class 180

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 2 Upper Neck Fx

Max = 952.75 Nwt @ 90.00 msec
Min = -136.60 Nwt @ 201.60 msec



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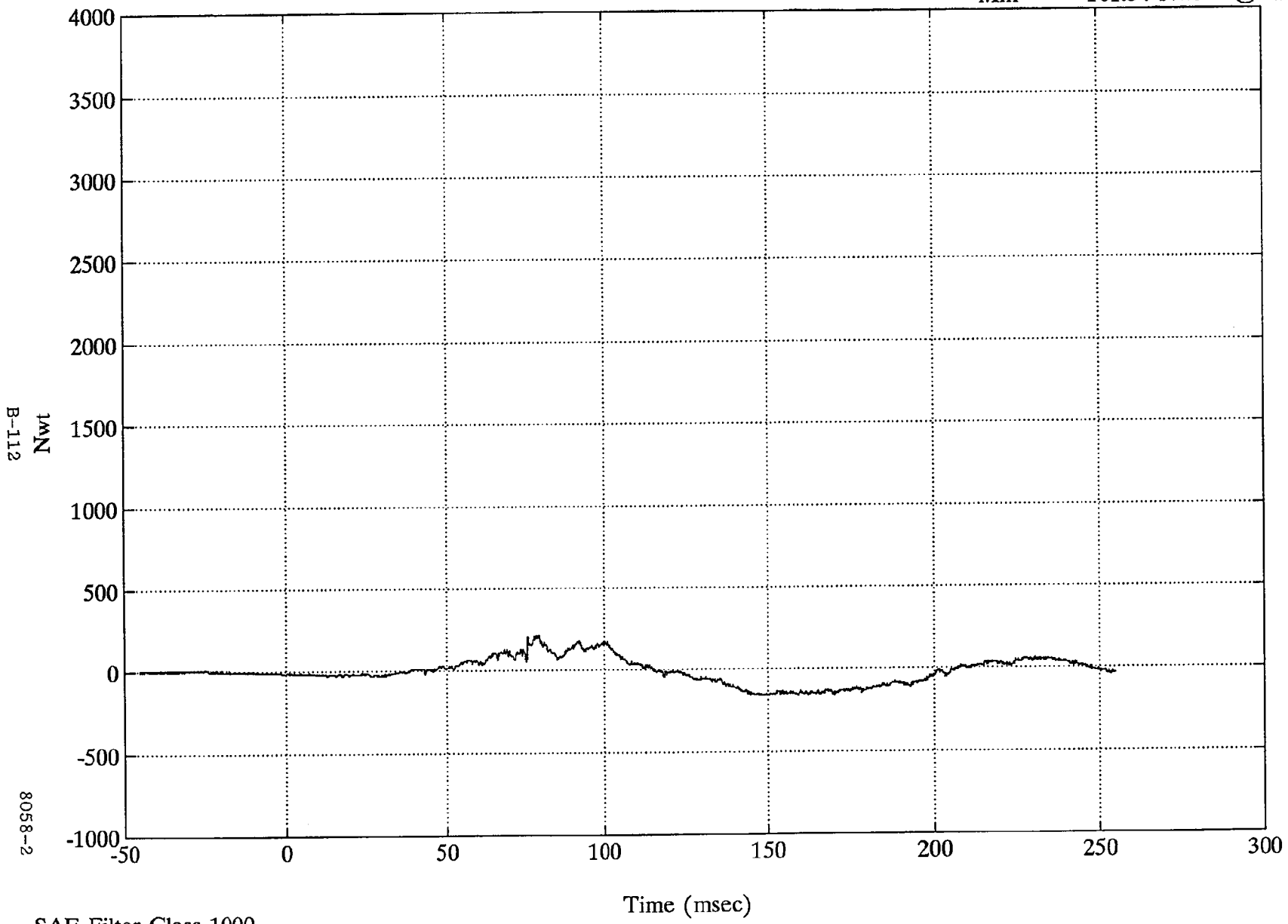
SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 2 Upper Neck Fy

Max = 216.83 Nwt @ 78.84 msec
Min = -161.34 Nwt @ 170.28 msec



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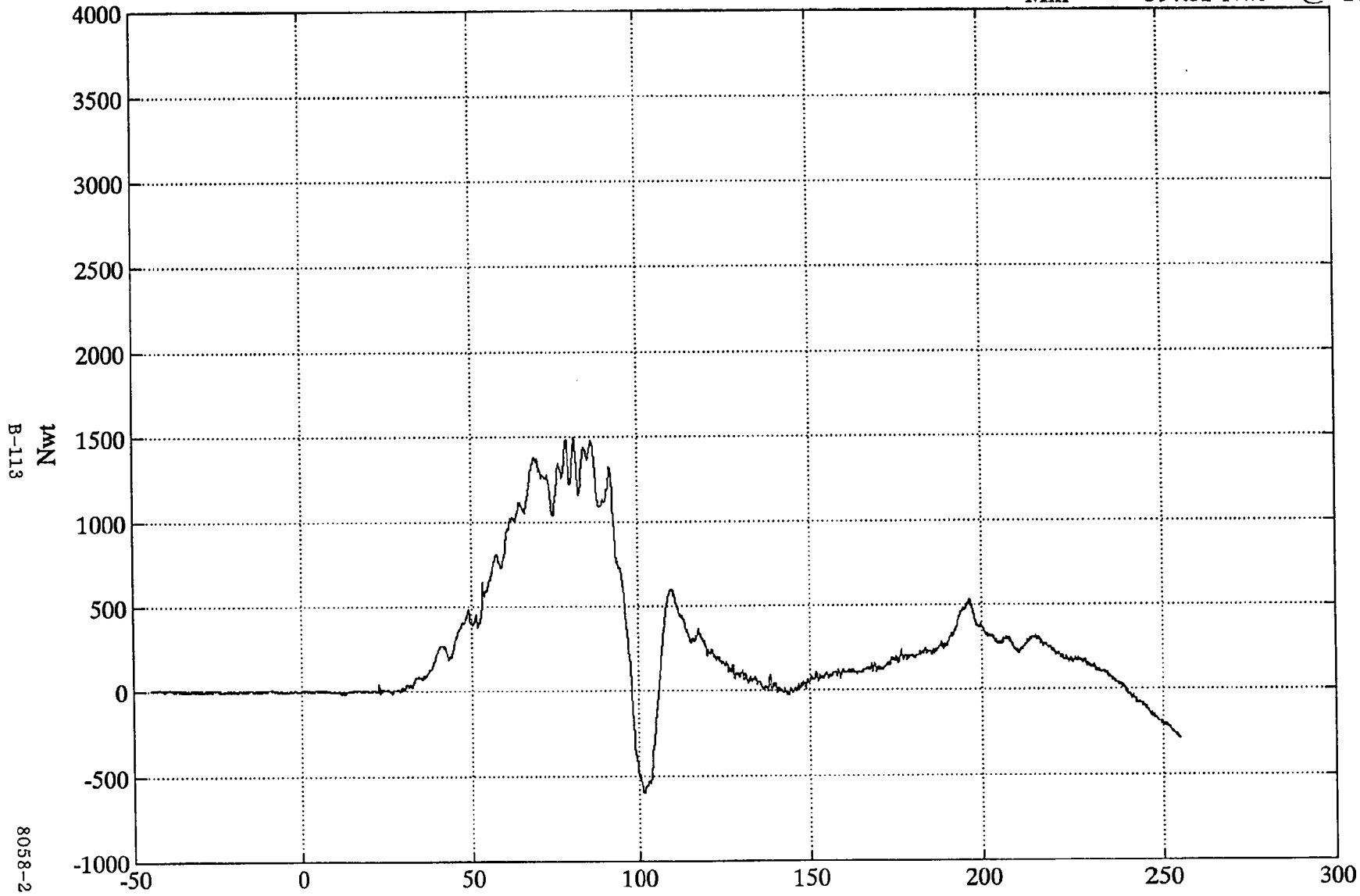
8058-2

SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 2 Upper Neck Fz

Max = 1495.81 Nwt @ 81.23 msec
Min = -597.51 Nwt @ 101.76 msec

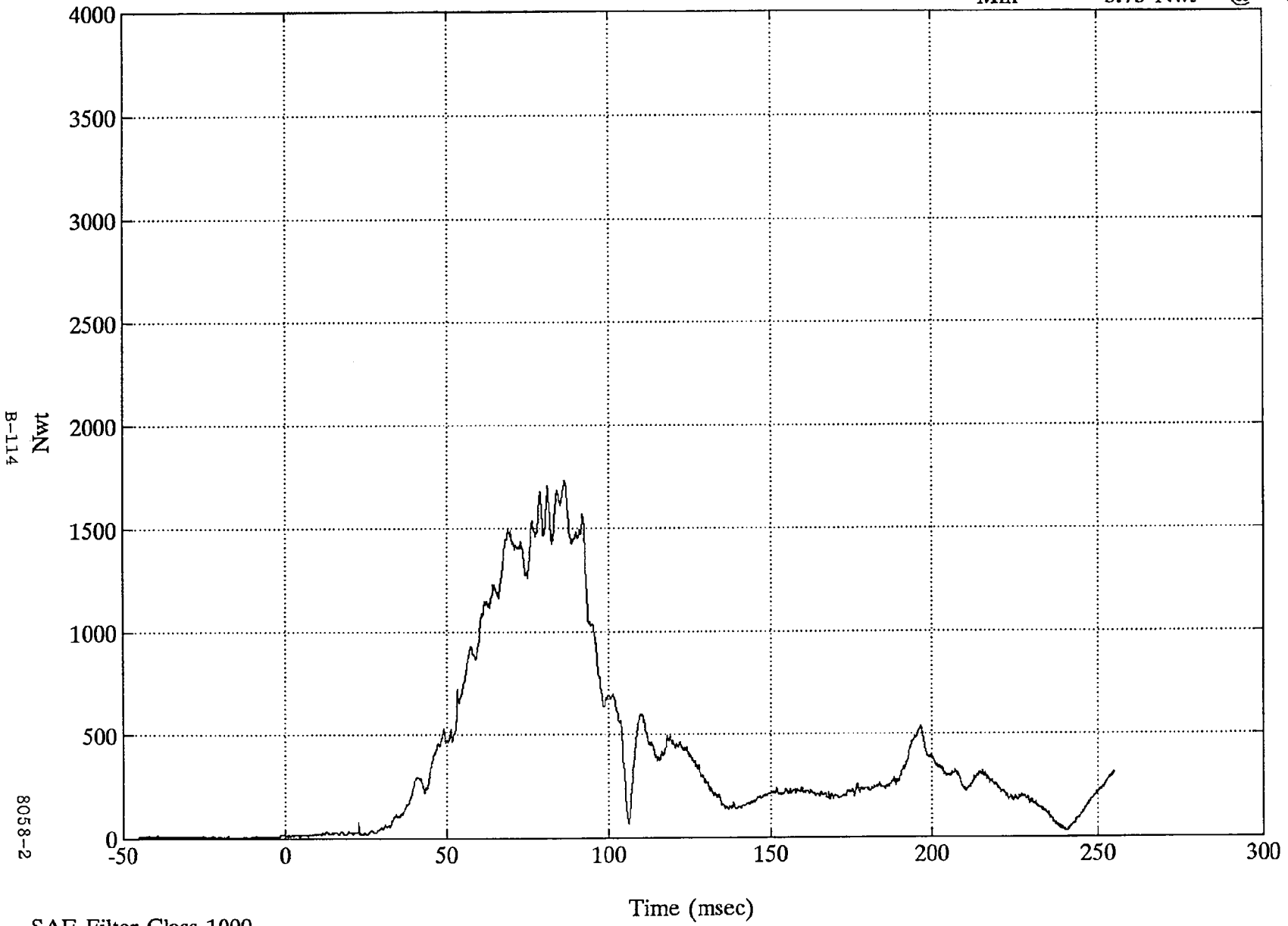


SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 2 Neck Force Res.

Max = 1729.86 Nwt @ 86.40 msec
Min = 5.75 Nwt @ -6.24 msec



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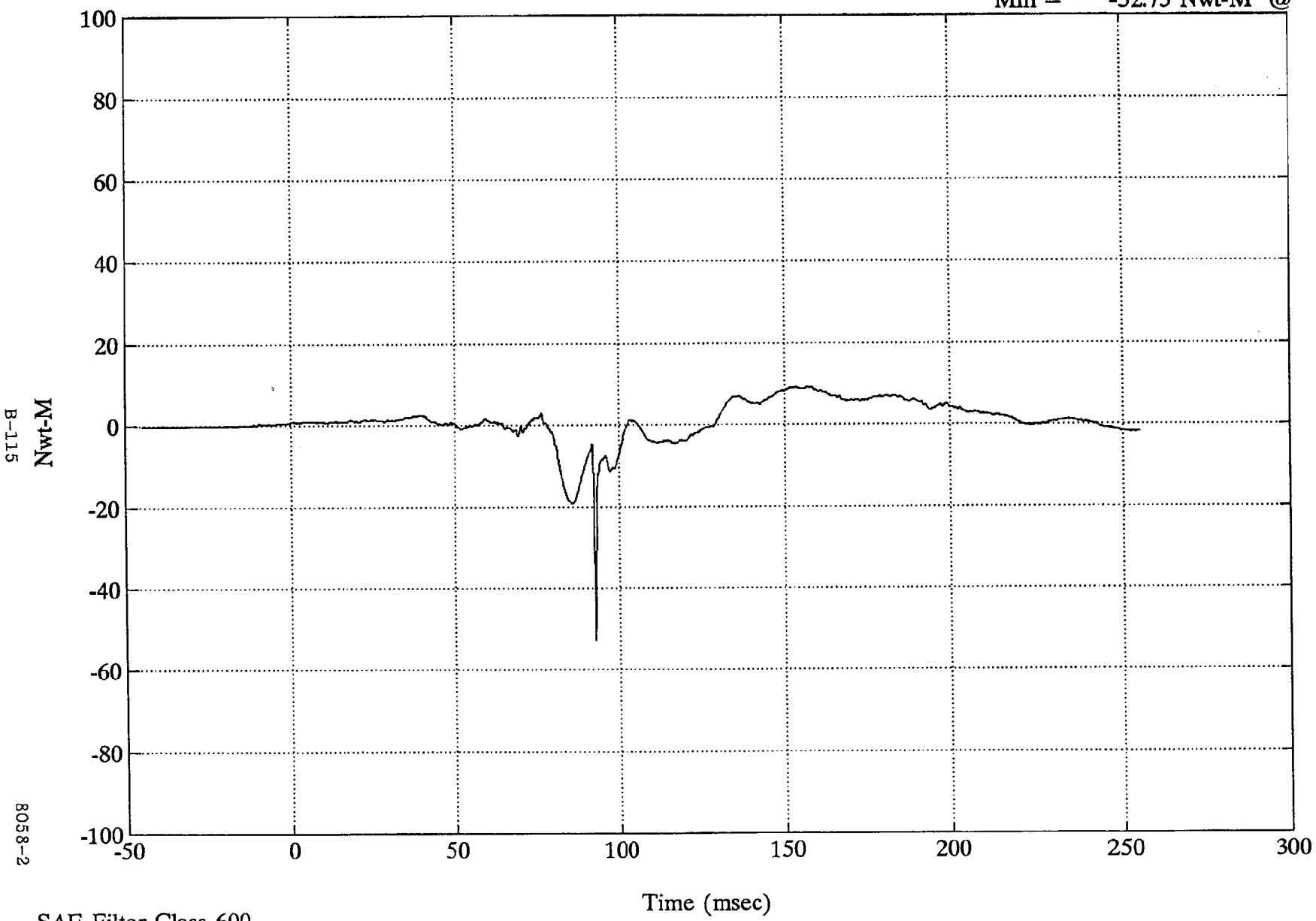
8058-2

SAE Filter Class 1000

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 2 Upper Neck Mx

Max = 9.19 Nwt-M @ 156.84 msec
Min = -52.75 Nwt-M @ 92.64 msec



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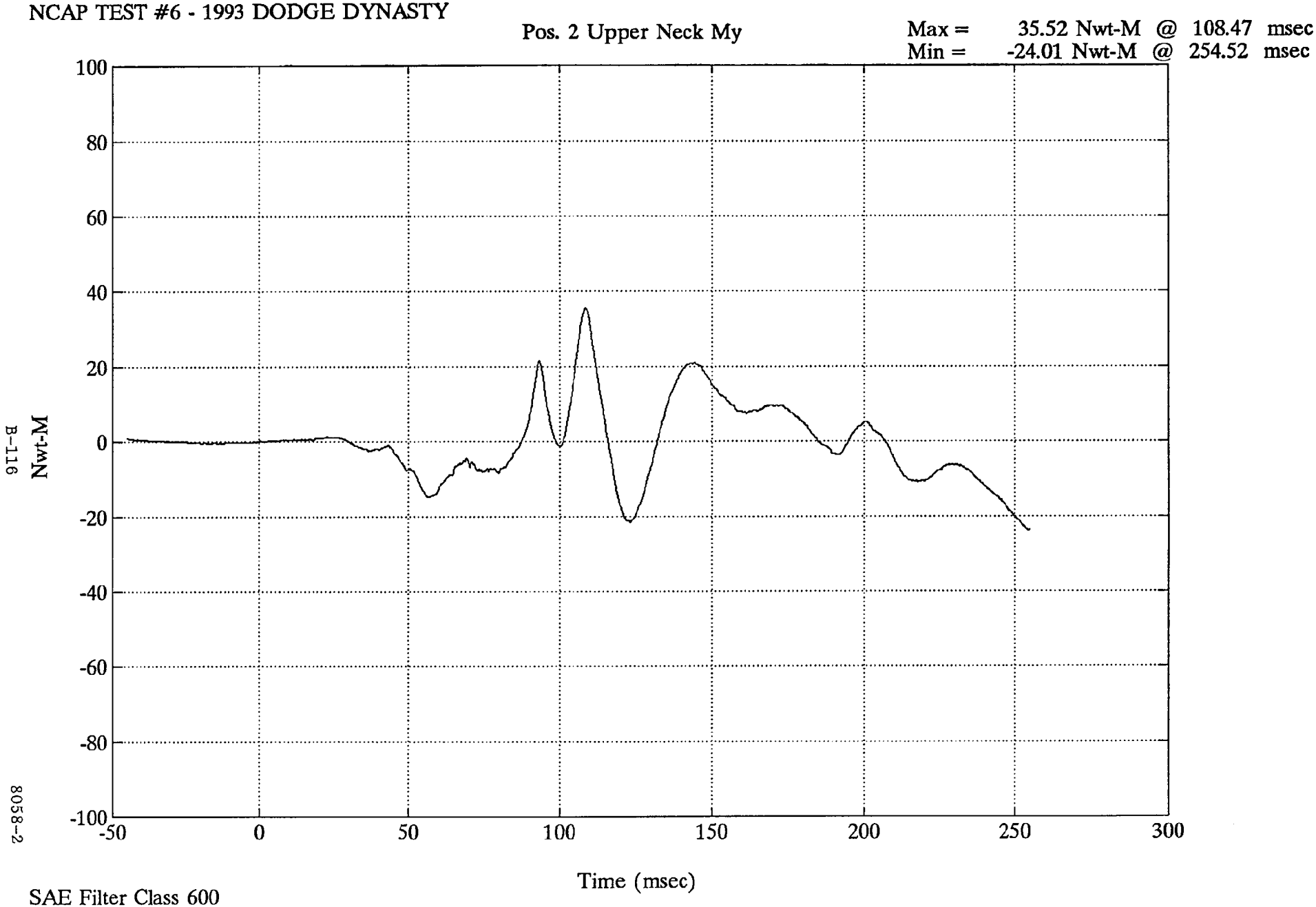
8058-2

SAE Filter Class 600

NCAP TEST #6 - 1993 DODGE DYNASTY

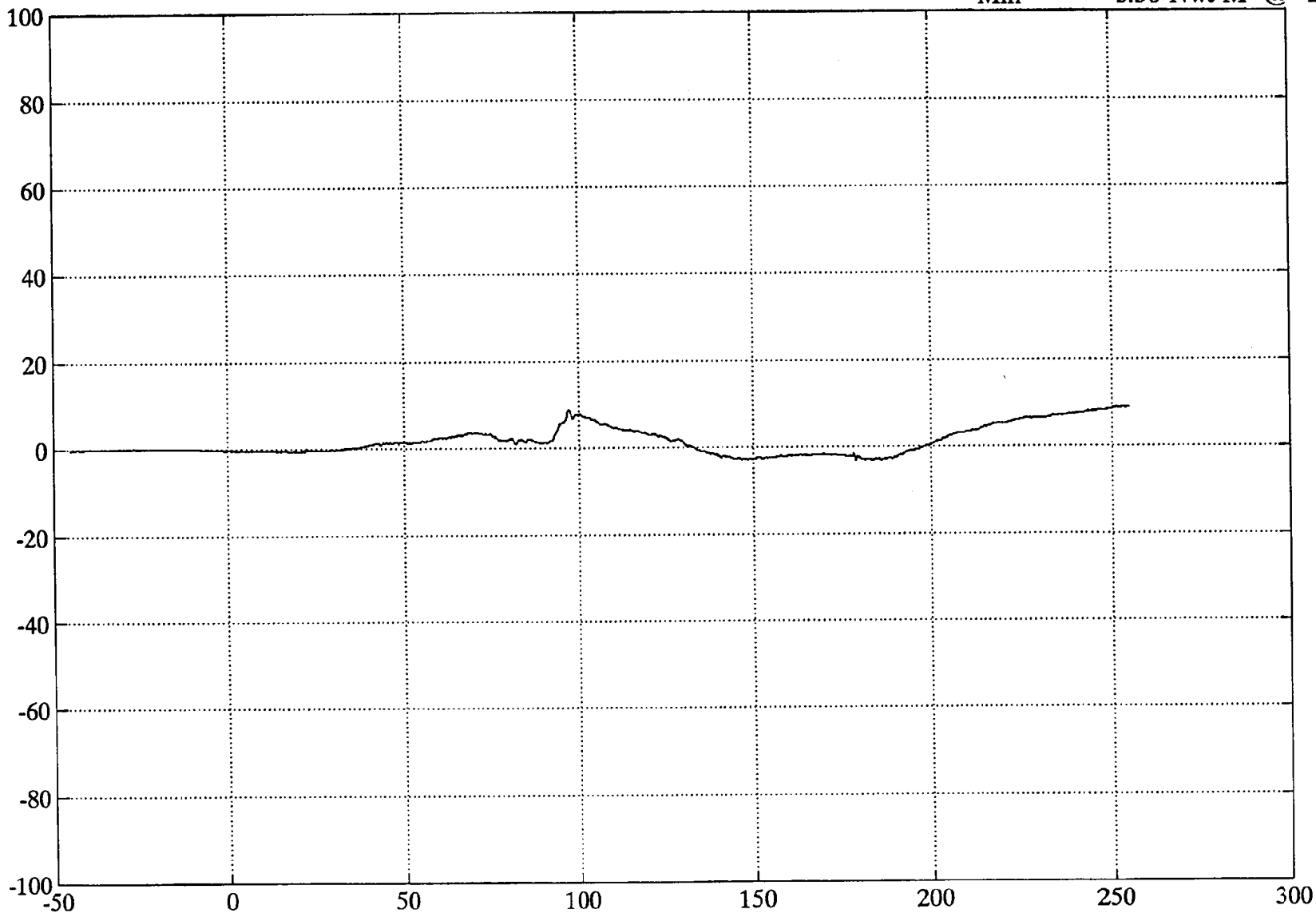


SAE Filter Class 600

NCAP TEST #6 - 1993 DODGE DYNASTY

Pos. 2 Upper Neck Mz

Max = 8.98 Nwt-M @ 254.40 msec
Min = -3.30 Nwt-M @ 178.80 msec



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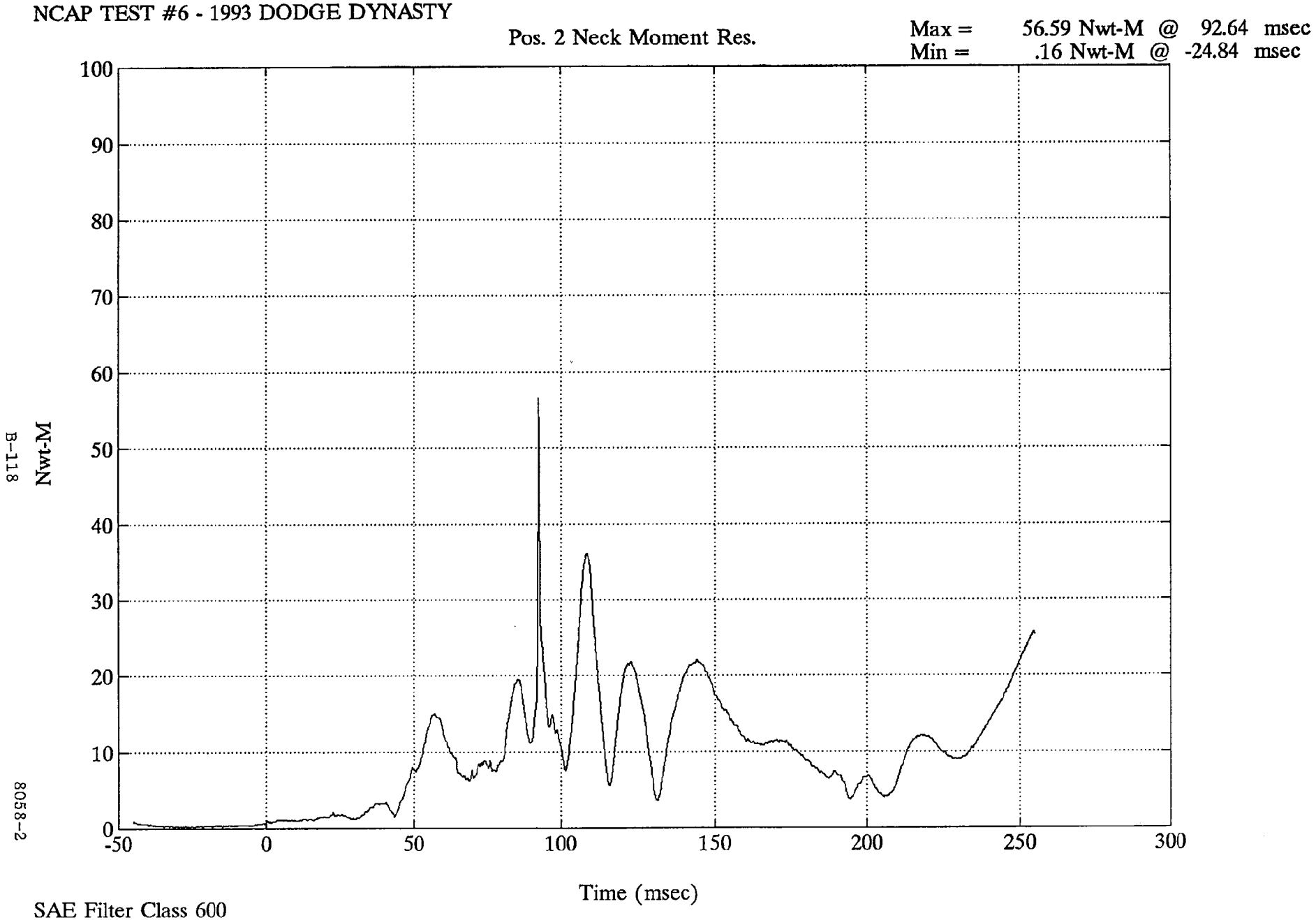
8058-2

SAE Filter Class 600

NCAP TEST #6 - 1993 DODGE DYNASTY



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SAE Filter Class 600

Appendix C

PART 572E DUMMY CONFIGURATION

AND PERFORMANCE VERIFICATION DATA SHEETS

Appendix C contains the results from certification tests performed on the 50th percentile male anthropomorphic test devices utilized for this crash test. The results indicate that the dummies meet all of the performance requirements of the six standard tests as specified in 49 CFR Part 572, Federal Register, Volume 42, No. 25, dated February 7, 1977.

The tests were conducted at the Dummy Certification Test Facility of Calspan Corporation, Advanced Technology Center. A summary of the test results, and Part 572 specifications are included in this Appendix.

Dummy serial numbers and certification dates are:

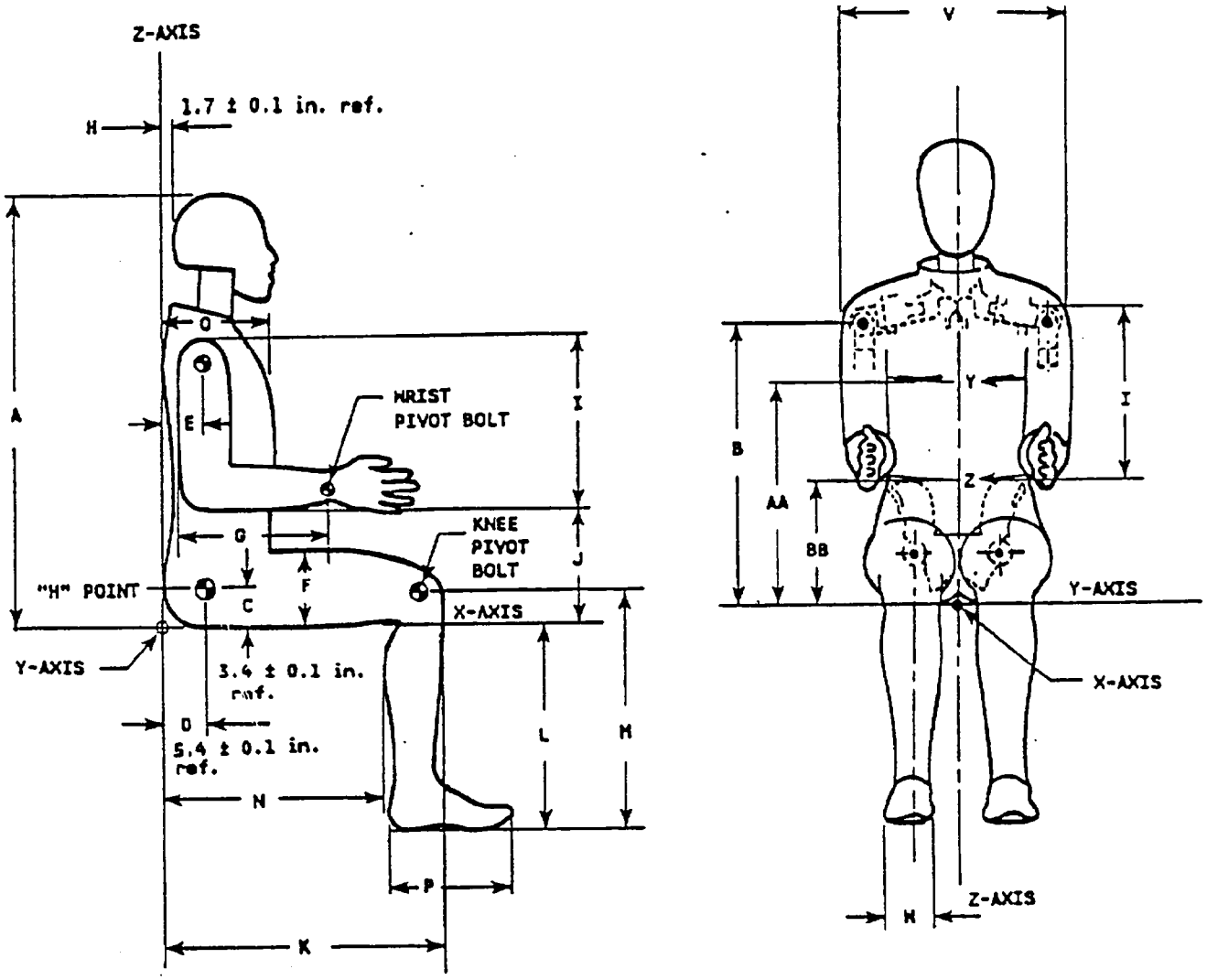
Serial No.	Completion Date
245	8-27-92
150	10-23-92

Electronic Test Equipment

The complement of signal conditioning, recording and display equipment, in conjunction with dummy certification testing, can be found in New Car Assessment and Standards Indicant Testing Final Report No. 6525-V-1.

Figure 7

DUMMY CONFIGURATION DIMENSIONS



NOTE: FIGURE IS REFERENCED TO THE ERECT SEATED POSITION. THE CURVED LUMBAR DOES NOT ALLOW THE HYBRID III TO BE POSITIONED IN A PERFECT ERECT ATTITUDE.

HYBRID III EXTERNAL DIMENSIONS

S/N 245 HUMANOID

DUMMY SERIAL NO. 245 DATE: 10/16/92

TEMPERATURE		20.5 DEG. C
RELATIVE HUMIDITY		52 %
LOCATION FOR CHEST CIRCUMFERENCE (AA)	429-434 mm	431 mm
LOCATION FOR WAIST CIRCUMFERENCE (BB)	226-231 mm	228 mm
CHEST CIRCUMFERENCE (Y)	970-1001 mm	998 mm
WAIST CIRCUMFERENCE (Z)	815-866 mm	863 mm
CHEST DEPTH (O)	213-229 mm	213 mm
H-POINT HEIGHT (C)	84-89 mm	89 mm
H-POINT FROM SEAT BACK (D)	135-140 mm	137 mm
SKULL CAP TO BACKLINE (H)	41-46 mm	43 mm
TOTAL SITTING HEIGHT (A)	879-889 mm	889 mm
THIGH CLEARANCE (F)	140-155 mm	152 mm
BUTTOCK KNEE LENGTH (K)	580-605 mm	596 mm
BUTTOCK POPLITAL LENGTH (N)	452-477 mm	464 mm
POPLITEAL LENGTH (L)	430-455 mm	447 mm
KNEE PIVOT HEIGHT (M)	485-501 mm	487 mm
FOOT LENGTH (P)	252-267 mm	256 mm
FOOT BREADTH (W)	91-107 mm	96 mm
SHOULDER PIVOT FROM BACKLINE (E)	84-94 mm	89 mm
SHOULDER BREADTH (V)	422-437 mm	426 mm
SHOULDER PIVOT HEIGTH (B)	505-521 mm	518 mm
ELBOW REST HEIGHT (J)	190-211 mm	205 mm
SHOULDER-ELBOW LENGTH (I)	330-345 mm	335 mm
BACK OF ELBOW TO WRIST PIVOT (G)	290-305 mm	294 mm

DUMMY MEETS SPECIFICATIONS

TECHNICIAN: IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

HEAD DROP TEST

HYBRID III

DATE : 8/7/92

CALSPAN SEQUENTIAL NUMBER 1 HY3 SN: 245 HEAD DROP CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20 - 25 DEG. C	20 DEG. C
RELATIVE HUMIDITY	10% - 70%	45 %
PEAK RESULTANT ACCELERATION	225 - 275 G'S	251.1 G'S
PEAK LATERAL ACCELERATION	15 G'S MAX	10.9 G'S
IS ACCELERATION CURVE UNIMODAL?	YES	YES

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

NECK FLEXION TEST

HYBRID III

DATE : 8/26/92 6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 1 HY3 SN:245 CAL NECK FLEXION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5-22.2 DEG. C	22 DEG. C
RELATIVE HUMIDITY		10% - 70%	50 %
IMPACT VELOCITY		24.8 - 25.7 KPH	25.2 KPH
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G'S	23.31 G'S
	20 MS	17.60 - 22.60 G'S	22.24 G'S
	30 MS	12.50 - 18.50 G'S	16.7 G'S
MAX PENDULUM G'S ABOVE 30 MS		29 G'S MAX	16.7 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		34 - 42 MS	41.5 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	68.41 DEG.
	TIME	57 - 64 MS	58.38 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88 - 108 N-M	98.8 N-M
	TIME	47 - 58 MS	54.75 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	115.75 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	101.88 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

NECK EXTENSION TEST

HYBRID III

DATE : 8/27/92 6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 1 HY3 SN:245 CAL NECK EXTENSION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5 - 22.2 DEG. C	21 DEG. C
RELATIVE HUMIDITY		10% - 70%	49 %
IMPACT VELOCITY		21.4 - 22.3 KPH	22.0 KPH
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G'S	17.93 G'S
	20 MS	14.00 - 19.00 G'S	18.15 G'S
	30 MS	11.00 - 16.00 G'S	15.98 G'S
MAX PENDULUM G'S ABOVE 30 MS		22 G'S MAX	15.98 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		38 - 46 MS	39.19 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	93.55 DEG.
	TIME	72 - 82 MS	72.38 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	-80.0/-52.9 N-M	-73.3 N-M
	TIME	65 - 79 MS	68.3 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	148.25 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	124.5 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

THORAX IMPACT TEST

HYBRID III

DATE : 10/6/92

CALSPAN SEQUENTIAL NUMBER 1 HY3 SN 245 H.S. THORAX CAL

TEST PARAMETER	HIGH SPEED TEST SPECIFICATION	TEST RESULTS
TEMPERATURE	20.5 - 22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	40 %
PENDULUM VELOCITY	23.7 - 24.6 KPH	23.9 KPH
MAXIMUM DEFLECTION	64 - 73 mm	64.2 mm
MAXIMUM RESISTIVE FORCE	4804 - 5538 NEWTONS	5484 NEWTONS
INTERNAL HYSTERESIS	69% - 85%	76.1 %

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 7/31/92 KNEE: LEFT

CALSPAN SEQUENTIAL NUMBER 1 HY3 SN: 245 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20 - 25 DEG. C	20 DEG. C
RELATIVE HUMIDITY	10% - 70%	46 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4430 - 6965 N	5048 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 7/31/92 KNEE: RIGHT

CALSPAN SEQUENTIAL NUMBER 1 HY3 SN: 245 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20 - 25 DEG. C	20 DEG. C
RELATIVE HUMIDITY	10% - 70%	46 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4430 - 6965 N	4764 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

INSTRUMENT CALIBRATION INFORMATION

NHTSA DUMMY I.D. NUMBER: 245

A. DUMMY INSTRUMENTS

	MFG	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
1. HEAD ACCELEROMETER				
HX LONGITUDINAL	ENDEVCO	A12C	9/92	3/93
HY LATERAL	ENDEVCO	A60C	9/92	3/93
HZ VERTICAL	ENDEVCO	A84G	9/92	3/93
2. CHEST ACCELEROMETER				
CX LONGITUDINAL	ENDEVCO	EM94	9/92	3/93
CY LATERAL	ENDEVCO	A83G	9/92	3/93
CZ VERTICAL	ENDEVCO	A30G	9/92	3/93
3. FEMUR LOAD CELLS				
LEFT SIDE	GSE	954	5/92	11/92
RIGHT SIDE	GSE	955	5/92	11/92

B. CALIBRATION LABORATORY INSTRUMENTS

	MFG	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
1. PENDULUM ACC.	CEC	A160	7/92	1/93
2. TEST PROBE ACCELEROMETER	CEC	A161	7/92	1/93
3. LUMBAR FLEXION TEST PUSH FORCE GAUGE	TRANS-DUCER INC	20051	7/92	1/93
4. ABDOMINAL COMPRESS. TEST FORCE GAUGE	BLH	72952	7/92	1/93
5. ABDOMINAL COMPRESS. TEST FORCE GAUGE	CIC	567-11	7/92	1/93

HYBRID III EXTERNAL DIMENSIONS

S/N 150 HUMANOID

DUMMY SERIAL NO. 150 DATE: 10/23/92

TEMPERATURE		20.5 DEG. C
RELATIVE HUMIDITY		40 %
LOCATION FOR CHEST CIRCUMFERENCE (AA)	429-434 mm	431 mm
LOCATION FOR WAIST CIRCUMFERENCE (BB)	226-231 mm	228 mm
CHEST CIRCUMFERENCE (Y)	970-1001 mm	998 mm
WAIST CIRCUMFERENCE (Z)	815-866 mm	863 mm
CHEST DEPTH (O)	213-229 mm	213 mm
H-POINT HEIGHT (C)	84-89 mm	88 mm
H-POINT FROM SEAT BACK (D)	135-140 mm	137 mm
SKULL CAP TO BACKLINE (H)	41-46 mm	43 mm
TOTAL SITTING HEIGHT (A)	879-889 mm	881 mm
THIGH CLEARANCE (F)	140-155 mm	142 mm
BUTTOCK KNEE LENGTH (K)	580-605 mm	591 mm
BUTTOCK POPLITAL LENGTH (N)	452-477 mm	470 mm
POPLITEAL LENGTH (L)	430-455 mm	452 mm
KNEE PIVOT HEIGHT (M)	485-501 mm	500 mm
FOOT LENGTH (P)	252-267 mm	259 mm
FOOT BREADTH (W)	91-107 mm	96 mm
SHOULDER PIVOT FROM BACKLINE (E)	84-94 mm	94 mm
SHOULDER BREADTH (V)	422-437 mm	429 mm
SHOULDER PIVOT HEIGTH (B)	505-521 mm	513 mm
ELBOW REST HEIGHT (J)	190-211 mm	208 mm
SHOULDER-ELBOW LENGTH (I)	330-345 mm	337 mm
BACK OF ELBOW TO WRIST PIVOT (G)	290-305 mm	292 mm

DUMMY MEETS SPECIFICATIONS

TECHNICIAN: IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

HEAD DROP TEST

HYBRID III

DATE : 10/22/92

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN: 150 HEAD DROP CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	40 %
PEAK RESULTANT ACCELERATION	225 - 275 G'S	227 G'S
PEAK LATERAL ACCELERATION	15 G'S MAX	10.9 G'S
IS ACCELERATION CURVE UNIMODAL?	YES	YES

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

NECK FLEXION TEST

HYBRID III

DATE : 10/22/92 6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN:150 CAL NECK FLEXION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5-22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY		10% - 70%	38 %
IMPACT VELOCITY		24.8 - 25.7 KPH	24.9 KPH
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G'S	23.17 G'S
	20 MS	17.60 - 22.60 G'S	21.46 G'S
	30 MS	12.50 - 18.50 G'S	18.46 G'S
MAX PENDULUM G'S ABOVE 30 MS		29 G'S MAX	18.46 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		34 - 42 MS	39.75 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	77.89 DEG.
	TIME	57 - 64 MS	59 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88 - 108 N-M	102.6 N-M
	TIME	47 - 58 MS	54.75 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	119.50 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	97.75 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

NECK EXTENSION TEST

HYBRID III

DATE : 10/23/92 6 AXIS NECK TRANSDUCER

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN:150 CAL NECK EXTENSION

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.5 - 22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY		10% - 70%	40 %
IMPACT VELOCITY		21.4 - 22.3 KPH	22.1 KPH
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G'S	20.69 G'S
	20 MS	14.00 - 19.00 G'S	18.95 G'S
	30 MS	11.00 - 16.00 G'S	15.63 G'S
MAX PENDULUM G'S ABOVE 30 MS		22 G'S MAX	15.63 G'S
DECELERATION -TIME CURVE DECAY TIME TO 5 G'S		38 - 46 MS	41.75 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	101.3 DEG.
	TIME	72 - 82 MS	72 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	-80.0/-52.9 N-M	-79.7 N-M
	TIME	65 - 79 MS	67.13 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	149 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	120.25 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

THORAX IMPACT TEST

HYBRID III

DATE : 10/23/92

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN 150 H.S. THORAX CAL

TEST PARAMETER	HIGH SPEED TEST SPECIFICATION	TEST RESULTS
TEMPERATURE	20.5 - 22.2 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	40 %
PENDULUM VELOCITY	23.7 - 24.6 KPH	23.7 KPH
MAXIMUM DEFLECTION	64 - 73 mm	64.26 mm
MAXIMUM RESISTIVE FORCE	4804 - 5538 NEWTONS	5511 NEWTONS
INTERNAL HYSTERESIS	69% - 85%	73.2 %

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 10/22/92 KNEE: LEFT

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN: 150 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	40 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4430 - 6965 N	4910 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

CALSPAN CORPORATION

TRANSPORTATION RESEARCH DEPARTMENT

KNEE IMPACT TEST

HYBRID III

DATE : 10/22/92 KNEE: RIGHT

CALSPAN SEQUENTIAL NUMBER 2 HY3 SN: 150 KNEE 4.9 KGS CAL

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20 - 25 DEG. C	20.5 DEG. C
RELATIVE HUMIDITY	10% - 70%	40 %
PROBE VELOCITY	7.5 - 7.7 KPH	7.68 KPH
PEAK KNEE IMPACT FORCE	4430 - 6965 N	4870 N
PROBE WEIGHT	4.9 KGS	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN IVAN MINKEWICZ

INSTRUMENT CALIBRATION INFORMATION

NHTSA DUMMY I.D. NUMBER: 150

A. DUMMY INSTRUMENTS

	MFG	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
1. HEAD ACCELEROMETER				
HX LONGITUDINAL	ENDEVCO	A39J	9/92	3/93
HY LATERAL	ENDEVCO	A33F	9/92	3/93
HZ VERTICAL	ENDEVCO	A27F	9/92	3/93
2. CHEST ACCELEROMETER				
CX LONGITUDINAL	ENDEVCO	A33A	7/92	1/93
CY LATERAL	ENDEVCO	A67A	7/92	1/93
CZ VERTICAL	ENDEVCO	FB32L	5/92	11/92
3. FEMUR LOAD CELLS				
LEFT SIDE	GSE	951	5/92	11/92
RIGHT SIDE	GSE	952	5/92	11/92

B. CALIBRATION LABORATORY INSTRUMENTS

	MFG	SERIAL NUMBER	DATE LAST CALIBRATED	DATE OF NEXT CALIBRATION
1. PENDULUM ACC.	CEC	A160	7/92	1/93
2. TEST PROBE ACCELEROMETER	CEC	A161	7/92	1/93
3. LUMBAR FLEXION TEST PUSH FORCE GAUGE	TRANS-DUCER INC	20051	7/92	1/93
4. ABDOMINAL COMPRESS. TEST FORCE GAUGE	BLH	72952	7/92	1/93
5. ABDOMINAL COMPRESS. TEST FORCE GAUGE	CIC	567-11	7/92	1/93

Appendix D

DUMMY, VEHICLE AND LABORATORY INSTRUMENT CALIBRATION

INSTRUMENT CALIBRATION FOR DRIVER DUMMY
(6 Month Calibration Minimum)

DRIVER DUMMY		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X	A12C	ENDEVCO	9/92	3/93
	Y	A60C	ENDEVCO	9/92	3/93
	Z	A84G	ENDEVCO	9/92	3/93
Chest	X	EM94	ENDEVCO	9/92	3/93
	Y	A83G	ENDEVCO	9/92	3/93
	Z	A30G	ENDEVCO	9/92	3/93
Right Femur Load Cell		955	GSE	5/92	11/92
Left Femur Load Cell		954	GSE	5/92	11/92
Neck Load Cell	X	269	DENTON	8/91	2/92
	Y	269	DENTON	8/91	2/92
	Z	269	DENTON	8/91	2/92
Neck Moment	X	269	DENTON	8/91	2/92
	Y	269	DENTON	8/91	2/92
	Z	269	DENTON	8/91	2/92
Chest Deflection Gauge Hybrid III Use Only		245	HUMANOID	7/92	1/93
Lap Belt Load Cells		123	LEBOW	5/92	11/92
Shoulder Belt Load Cells		127	LEBOW	5/92	11/92
Spool-Out Potentiometer		22	SERVONIC INST.	10/92	4/93
Belt Stretch Transducer		E1	CALSPAN	10/92	4/93

INSTRUMENT CALIBRATION FOR PASSENGER DUMMY
(6 Month Calibration Minimum)

PASSENGER DUMMY		Serial #	Manufacturer	Calibration	
				Last	Next
Head	X	A39J	ENDEVCO	9/92	3/93
	Y	A33F	ENDEVCO	9/92	3/93
	Z	A27F	ENDEVCO	9/92	3/93
Chest	X	A33A	ENDEVCO	7/92	1/93
	Y	A67A	ENDEVCO	7/92	1/93
	Z	FB32L	ENDEVCO	5/92	11/92
Right Femur Load Cell		952	GSE	5/92	11/92
Left Femur Load Cell		951	GSE	5/92	11/92
Neck Load Cell	X	076	DENTON	7/91	1/92
	Y	076	DENTON	7/91	1/92
	Z	076	DENTON	7/91	1/92
Neck Moment	X	076	DENTON	7/91	1/92
	Y	076	DENTON	7/91	1/92
	Z	076	DENTON	7/91	1/92
Chest Deflection Gauge Hybrid III Use Only		150	HUMANOID	7/92	1/93
Lap Belt Load Cells		133	LEBOW	5/92	11/92
Shoulder Belt Load Cells		135	LEBOW	5/92	11/92
Spool-Out Potentiometer		32	SERVONIC INST.	10/92	4/93
Belt Stretch Transducer		E2	CALSPAN	10/92	4/93

INSTRUMENT CALIBRATION FOR VEHICLE ACCELEROMETERS
(6 Month Calibration Minimum)

	Serial #	Manufacturer	Calibration	
			Last	Next
Left Seat Rear Crossmember	A156	CEC	4/92	10/92
Right Rear Seat Crossmember	A142	CEC	7/92	1/93
Top of Engine	A144	CEC	4/92	10/92
Bottom of Engine	A70	CEC	8/92	2/93
Left Disc Brake Caliper	A44	CEC	7/92	1/93
Right Disc Brake Caliper	A181	CEC	5/92	11/92
Instrument Panel	A183	CEC	4/92	10/92
Left Rear Crossmember	A69	CEC	6/92	12/92
Right Rear Crossmember	A89	CEC	8/92	2/93

Appendix E

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

UNIBELTS

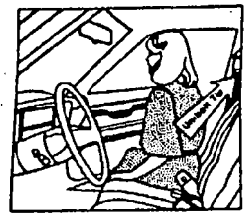
The seats next to the front and rear doors of your vehicle are equipped with UNIBELTS.

Each unibelt is a combined lap/shoulder belt system. The belt webbing retractor is designed to lock only during very sudden stops or impacts. This feature allows the shoulder part of the belt to move freely with you under normal conditions. But, in a collision, the belt will lock and reduce the risk of your striking the inside of the vehicle or being thrown out. The retractors for the front seat belts will also lock if the belt webbing is jerked or pulled rapidly.

WARNING! Wearing a seat belt incorrectly is dangerous. Seat belts are designed to go around the large bones of your body. These are the strongest parts of your body and can take the forces of a collision the best. Wearing your belt in the wrong place could make your injuries in a collision much worse. You might suffer internal injuries, or you could even slide out of part of the belt. Follow these instructions to wear your seat belt safely and to keep your passengers safe, too.

WARNING! Belting two people into one seat belt can lead to greater injury. People belted together can crash into one another in an accident, hurting one another badly. Never use a unibelt or a lap belt for more than one person, no matter what their size.

UNIBELT OPERATING INSTRUCTIONS



1

1. Enter the vehicle and close the door. Sit back and adjust the seat.

2

2. The seat belt latch plate is above the back of your seat. Grasp the latch plate and pull out the belt. Slide the latch plate up the webbing as far as necessary to make the belt go around your lap.

3

3. When the belt is long enough to fit, insert the latch plate into the buckle until you hear a "click."

E-3

8058-2

WARNING! A belt that is buckled into the wrong buckle will not protect you properly. The lap portion could ride too high on your body, possibly causing internal injuries. Always buckle your belt into the buckle nearest you.

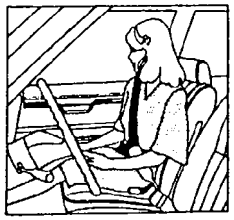
A belt that is too loose will not protect you as well. In a sudden stop you could move too far forward, increasing the possibility of injury. Wear your seat belt snugly.

A belt that is worn under your arm is very dangerous. Your body could fall into the inside surfaces of the vehicle in a collision, increasing head and neck injury. And a belt worn under the arm can cause internal injuries. Ribs aren't as strong as shoulder bones. Wear the belt over your shoulder so that your strongest bones will take the force in a collision.

4

4. Position the lap belt across your thighs, below your abdomen. To remove slack in the lap belt portion, pull up a bit on the shoulder belt, as shown. To loosen the lap belt if it is too tight, tilt the latch plate and pull on the lap belt. A snug belt reduces the risk of sliding under the belt in a collision.

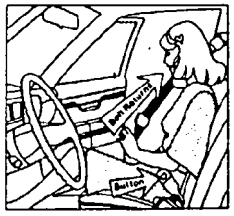
WARNING! A lap belt worn too high can increase the risk of internal injury in a collision. The belt forces won't be at the strong hip and pelvic bones, but across your abdomen. Always wear the lap belt as low as possible and keep it snug.



5

5. Position the shoulder belt on your chest so that it is comfortable and not resting on your neck. The retractor will withdraw any slack in the belt.

WARNING! A twisted belt can't do its job as well. In a collision it could even cut into you. Be sure the belt is straight. If you can't straighten a belt in your vehicle, take it to your dealer and have it fixed.



6

6. To release the belt, push the red button marked PRESS on the buckle. The belt will automatically retract to its stowed position. If necessary, slide the latch plate down the webbing to allow it to retract fully.

SEAT BELTS AND PREGNANT WOMEN

We recommend that pregnant women use the seat belts throughout their pregnancy. Keeping the mother safe is the best way to keep the baby safe.

Pregnant women should wear the lap part of the belt across the thighs and as snug across the hips as possible. Keep the belt low so that it does not come across the abdomen. That way the strong bones of the hips will take the force if there is a collision.

FRONT CENTER AND REAR CENTER LAP BELTS

Center seating positions have a lap belt only. To fasten a lap belt, slip the latch plate into the buckle.

To lengthen a lap belt, tilt the latch plate and pull. To remove slack, pull the loose end of the webbing. Wear the belt snug against the hips. Sit back and erect in the seat, then adjust the belt as tightly as is comfortable.

WARNING! A lap belt worn too loose or too high is dangerous. A belt worn too loose can allow you to slip down and under the belt in a collision. A belt that is too high will apply crash forces to the abdomen, not to the stronger hip bones. In either case, the risk of internal injuries is greater. Wear the lap belt low and snug.

WARNING! A frayed or torn belt could rip apart in a collision and leave you with no protection. Inspect the belt system periodically, checking for cuts, frays, or loose parts. Damaged parts must be replaced immediately. Do not disassemble or modify the system. Seat belt assemblies must be replaced after an accident if they have been damaged (bent retractor, torn webbing, etc).

SEAT BELT EXTENDER

If a seat belt is too short, even when fully extended, your dealer can provide you with a seat belt extender. This extender should be used only if the existing belt is not long enough. When it is not required, remove the extender and stow it.

CHILD RESTRAINT

Everyone in your vehicle needs to be buckled up all the time, babies and children, too.

WARNING! In a collision, an unrestrained child, even a tiny baby, can become a missile inside the vehicle. The force required to hold even an infant on your lap could become so great that you could not hold the child, no matter how strong you are. The child and others could be badly injured. Any child riding in your vehicle should be in a proper restraint for the child's size.

All states and Canadian provinces require small children to ride in proper restraint systems. This is the law, and you can be prosecuted for ignoring it.

Infants and Small Children

There are different sizes and types of restraints for children from newborn size to the bigger child almost large enough for an adult safety belt. Use the restraint that is correct for your child.

Two different child restraint systems are generally available:

- The infant carrier for babies weighing up to 20 lbs. (9kg.)
- The child seat for small children over 20 lbs.

In addition, some manufacturers make systems that can be first used as an infant carrier, and then converted to a child seat as the child grows.

Here are some tips on getting the most out of your child restraint:

- Before buying any restraint system, make sure that it has a label certifying that it meets Motor Vehicle Safety Standard 213. Chrysler also recommends that before you buy a child restraint, you try it in the vehicle seats where you will use it.

- The restraint must be appropriate for your child's weight and height. Check the label on the restraint for this too.
- Install the restraint in the rear seat if possible. According to accident statistics, children are safer when properly restrained in the rear seats than in the front.
- Carefully follow the instructions that come with the restraint. If you install the restraint improperly, it may not work when you need it.

WARNING! Improper installation can lead to failure of an infant or child restraint. It could come loose in a collision. The child could be badly injured or killed. Follow the manufacturer's directions exactly when installing an infant or child restraint.

- Infant and child restraints are secured in the vehicle seats by the lap belt or the lap part of the lap/shoulder belt. In the rear seats, you may have trouble tightening the belt on the child restraint because the buckle or latch plate interferes with the belt path opening on the restraint. Disconnect the latch plate from the buckle and twist the short buckle-end belt several turns to shorten it. Reassemble the latch plate to the buckle with the release button so that it is facing out.

  In the front seat, move the seat forward to reposition the buckle against the side of the child restraint.

  In the center rear seat if the belt still can't be tightened, or if by pulling and pushing on the restraint loosens the belt, you may need to do something more. Disconnect the latch plate from the buckle, turn it over, and reconnect it to the buckle. If you still can't make the child restraint secure, try a different seating position.

- Some child seat manufacturers recommend the use of

a top anchorage (tether) strap in addition to the lap belt. Your vehicle has tether strap anchorages behind the rear seating positions for use with these child seats. Your dealer can provide you with anchorage hardware and installation instructions.

- Buckle the child into the seat exactly as the seat manufacturer's directions tell you. The cinching latch plate will keep the belt tight.
- When your infant carrier or child seat is not in use, secure it with the seat belt or remove it from the vehicle. Don't leave it loose in the vehicle. In a sudden stop or collision, it could strike occupants and injure them.

Children Too Large For Child Seats

Children who are too large for child seats and who can sit upright by themselves should use the available lap/shoulder belts for best protection.

- Make sure that the child is seated upright in the seat.
- The lap belt should be fastened low on the hips and as snug as possible.
- Check belt fit periodically. A child's squirming or slouching can move the belt out of position.

If the shoulder belt contacts the face or neck, move the child closer to the middle of the vehicle. If this doesn't solve the problem, move the child to the center rear seating position and use the lap belt.

Booster seats that may help overcome this problem are also available for use with lap/shoulder belts. Before buying a booster seat, make sure that it has a label certifying that it meets applicable Motor Vehicle Safety Standards. Make sure that it is satisfactory for use in this vehicle.

DRIVER SUPPLEMENTAL RESTRAINT SYSTEM - AIRBAG

This vehicle has an airbag for the driver as a supplement to the seat belt restraint system. The airbag is mounted in the steering wheel. Its job is to inflate in higher speed frontal impacts. It works **with** the instrument panel knee bolster and the seat belt to provide improved protection for the driver.

WARNING! Relying on the airbag alone could lead to more severe injuries in a collision. The airbag works with your seat belt to restrain you properly. In some collisions the airbag won't deploy at all. Wear your seatbelt even though you have an airbag.

The seat belt is designed to protect you in many types of collisions. The airbag deploys only in frontal collisions. And it will not deploy in collisions at slow speed. But even in collisions where the airbag does work, you need the seat belt to keep you in the right position for the airbag to protect you properly.

WARNING! Ignoring the AIRBAG light in your instrument panel could mean you won't have the airbag to protect you in a collision. If the light does not come on, stays on after you start the vehicle, or if it comes on as you drive, have the airbag system checked right away.

The airbag system consists of the following:

- Crash Sensors
- Diagnostic Unit
- AIRBAG Readiness Light
- Airbag/inflator Unit
- Unique Steering Wheel and Column

- Interconnecting Wiring
- Knee Impact Bolster

How The Airbag System Works

- **Crash Sensors** in the front of the vehicle and in the occupant compartment determine if a frontal impact is severe enough to require the airbag. The sensors will not detect side, rollover, or rear impacts. Switches in the sensors are connected to the diagnostic unit and to the airbag/inflator unit.
- The **Diagnostic Unit** monitors the readiness of the electronic parts of the system whenever the ignition switch is in the START or RUN positions. These include all of the items listed above except the knee bolster. The Diagnostic Unit also turns on the AIRBAG light in the instrument panel for 6 to 8 seconds when the ignition is first turned on, then turns the light off. If it detects a malfunction in any part of the system, it turns on the light either momentarily or continuously.
- The **Airbag/Inflator Unit** is in the center of the steering wheel. When the crash sensors detect an impact requiring the airbag, they signal the inflator unit. A large quantity of non-toxic nitrogen gas is generated to inflate the airbag. The steering wheel hub trim cover separates and folds out of the way as the bag inflates to its full size. The bag fully inflates in about 50 milliseconds. This is about half of the time it takes to blink your eyes. It then quickly deflates by venting the nitrogen gas through holes in the airbag toward the instrument panel. In this way the bag does not interfere with your control of the vehicle.

If A Deployment Occurs

The airbag system is designed to deploy when the impact sensors detect a moderate-to-severe frontal collision, and then immediately deflate.

NOTE: *A frontal collision that is not severe enough to need airbag protection will not activate the system. This does not mean something is wrong with the airbag system.*

If you do have a collision which deploys the airbag, any or all of the following may occur:

- The nylon airbag material may sometimes cause abrasions and/or skin reddening to the driver as the airbag deploys and unfolds itself from the steering wheel.

  The abrasions are similar to friction rope burns or those you might get sliding along a carpet or gymnasium floor. They are not caused by contact with chemicals. They are not permanent and normally heal quickly. However, if you haven't healed significantly within a few days, or if you have any blistering, see your doctor immediately.

- As the airbag deflates you may see some smoke-like particles. The particles are a normal by-product of the process that generates the non-toxic nitrogen gas used for airbag inflation. These airborne particles may irritate the skin, eyes, nose, or throat. If you have skin or eye irritation, rinse the area with cool water. For nose or throat irritation, move to fresh air. If the irritation continues, see your doctor.

  If these particles settle on your clothing, follow the garment manufacturer's instructions for cleaning.

- Your vehicle may be safely driveable after the airbag deploys. If so, you can tuck the deployed airbag inside the opening in the steering wheel hub trim cover to make driving somewhat easier.

WARNING! A deployed airbag can't protect you in another collision. Have the airbag replaced by an authorized dealer as soon as possible.

MAINTAINING YOUR AIRBAG SYSTEM

WARNING!

- Modifications to any part of the airbag system could cause it to fail when you need it. You could be injured because the airbag is not there to protect you. Do not modify the components or wiring, including adding any kind of badges or stickers to the steering wheel hub trim cover. Do not modify the front bumper or vehicle body structure.
- You need proper knee impact protection in a collision. Make sure the fuse access panel, in the lower portion of the knee bolster, is in place before driving the vehicle. Do not mount or locate any aftermarket equipment on or behind the knee bolster.
- You can be injured if you are too close to the steering wheel hub and the airbag inflates. It is dangerous to try to repair any part of the airbag system yourself. Don't try to repair the airbag system. Be sure to tell anyone who works on your vehicle that it has an airbag.

You will want to have the airbag ready to inflate for your protection in an impact. So if any of the following occurs, have an authorized dealer service the system promptly:

- The AIRBAG light does not come on or flickers during the 6 to 8 seconds when the ignition switch is first turned on.
- The light remains on or flickers after the 6 to 8 second interval.
- The light flickers or comes on and remains on while driving.